annual report of the

indian council of agricultural research

1960-61

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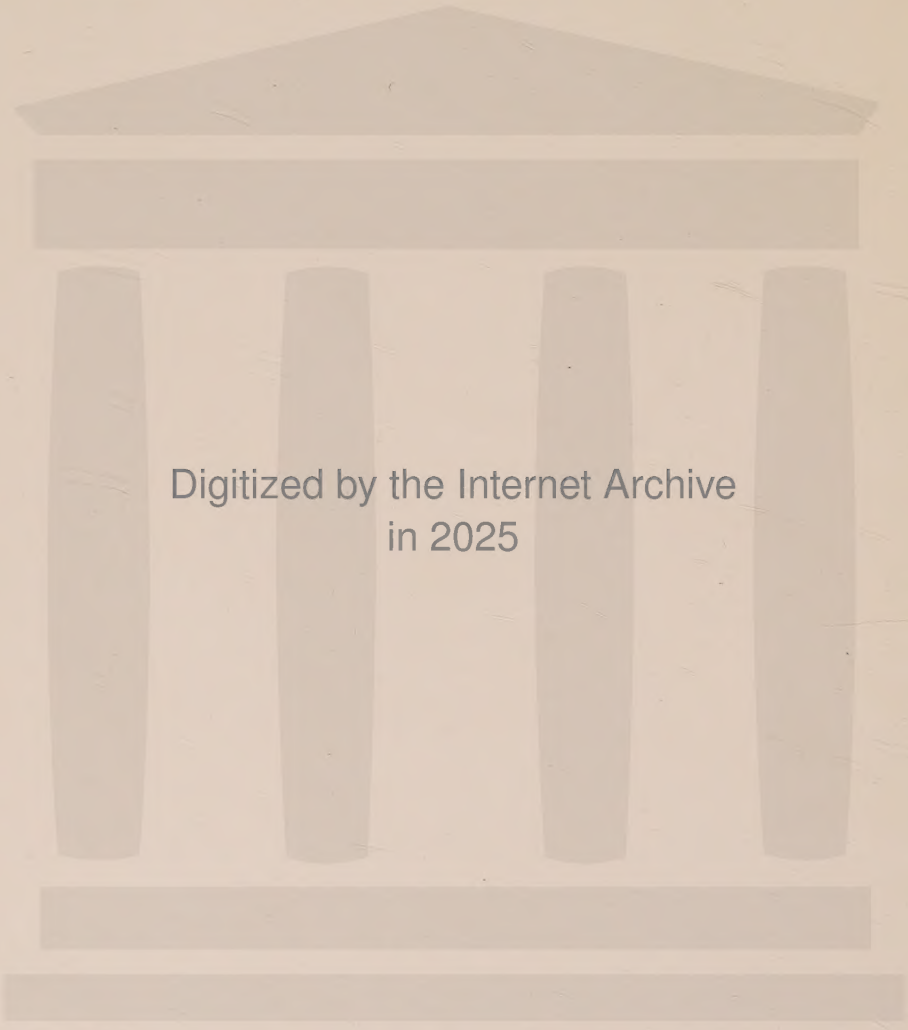
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Annual Report
of the
Indian Council of Agricultural Research
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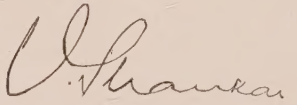
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
NEW DELHI

Foreword

In the past the audited accounts and certain portions of the Annual Report of the Indian Council of Agricultural Research presented to the members of the Council as a rule were about 16 months out of date. This was due to the fact that the technical reports on the Indian Council of Agricultural Research schemes received from the different States and other institutions had to be scrutinised by the Scientific Committees before they could be included in the Annual Report. With effect from this year, we have been able to get over this time-lag by presenting two separate reports on the administrative and technical aspects of the Council's schemes. The present Report gives a comprehensive review of the activities of the Council during the year and broad features of the major schemes in operation together with the audited accounts. The technical report which will be brought out separately will contain detailed technical information and presented in the succeeding year.

This procedure has been advantageous in another respect. Not handicapped by the combined extense of two reports we have been able to give a fairly comprehensive account of its activities and that too within a few months of the close of the year under review. A chapter has also been added to indicate the practical field utility of the results of the researches.

Thus it is hoped that members of the Council will have before them a fresh as well as a more comprehensive record of the Council's activities during the year.



New Delhi
August 13, 1961

Vice-President
Indian Council of Agricultural Research

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1.0 Administration

1.1 The Council sanctioned 105 new schemes of research in the fields of agriculture, animal husbandry and allied subjects at a total cost of Rs. 38·47 lakhs (Appendix I). Continuance of 99 current schemes was sanctioned at a cost of Rs. 51·64 lakhs (Appendix 2). Additional grants amounting to Rs. 1·13 lakhs for six current schemes were also given (Appendix 3). A sum of Rs. 10 lakhs was earmarked for sanctioning pilot projects which may be started for testing the results of research schemes during the year 1961-62. Forty-nine schemes terminated during the year (Appendix 4).

1.2 The income of the Council from (i) the Cess levied under the Agricultural Produce Cess Act, 27 of 1940, (ii) the grants received from the Government of India and (iii) grants from other sources, was as follows:

(i)	Receipts from the Cess	Rs. 49,57,590
(ii)	Grants from the Government of India (Appendix 5) ..	Rs. 8,86,340
(iii)	Grants from other sources (Appendix 6)	Rs. 15,47,758
		Rs. 73,91,688

1.3 **Meetings, Conferences, Seminars and Shows.** The various bodies of the Indian Council of Agricultural Research met in 83 different sessions during the year (Appendix 7). Seven conferences and seminars of research workers in the fields of agriculture, animal husbandry and allied subjects and an All-India Mango Show were also held (Appendix 8).

1.4 Lists of members of the Indian Council of Agricultural Research and its Governing Body, Standing Finance Committee, Advisory Board and Board of Research are appended (Appendices 9-13).

1.5 **Second Joint Indo-American Team.** As stated in the I.C.A.R. Annual Report for the year 1958-59, the Second Joint Indo-American Team on Agricultural Education, Research and Extension started functioning towards the end of 1959. The Team submitted its report in July, 1960. The Governing Body of the Indian Council of Agricultural Research decided that the recommendations of this report be examined by a High-level Committee with the Minister for Agriculture as Chairman. The Committee could, however, meet only in April and will shortly finalise its report.

1.6 **Agricultural Extension Advisory Committee.** The Council constituted an Agricultural Extension Advisory Committee in 1954 to ensure " that the recommendations of the I.C.A.R. are given due consideration in agricultural and animal husbandry development work in the project areas ". To achieve this objective, the Committee prepares self-contained notes on each crop based on the

latest results of researches. The Committee has so far prepared regional notes on Agricultural crops viz., Rice (57) Wheat (44) and Sugarcane (48) and Livestock species viz., Cattle and Buffaloes (59) and Sheep and Goats (18) for different States and territories and made them available to the extension workers. These notes are being revised in the light of the reactions of the State Governments. Preparation of similar notes on Cotton, Millets, Coconut, Tobacco, Lac, Oilseeds and Jute is in hand.

1.7 **Official Changes.** The following official changes took place in the Indian Council of Agricultural Research during the year 1960-61:

1.7.1 Consequent on the expiry of the tenure of Dr. M. S. Randhawa, I.C.S., Shri V. Shankar, I.C.S., formerly Director General of Posts and Telegraphs, took over as Special Secretary to the Government of India in the Ministry of Food and Agriculture (Department of Agriculture) and Vice-President, Indian Council of Agricultural Research with effect from the 17th November, 1960 (A.N.).

1.7.2 Shri A. S. Bhatnagar was appointed as Additional Secretary of the Indian Council of Agricultural Research with effect from the 23rd June, 1960, *vice* Shri Prakash Krishan, I.A.S., whose services were replaced at the disposal of the Uttar Pradesh Government.

1.7.3 Dr. V. G. Panse, Statistical Adviser in the Indian Council of Agricultural Research, was sent on deputation to the U.N.O. with effect from the 24th June, 1960 and Dr. G. R. Seth has been appointed to officiate in his place.

1.8 **Utilization of the Services of Retired Scientists.** During the year, four scientists were given financial assistance under the scheme and they have started work on their respective projects.

1.9 **Award of the Rafi Ahmed Kidwai Memorial Prizes for Agricultural Research.** The first series of the prizes for research work done during the year 1957 were awarded to seven scientists (see Appendix 15).

2.0 Cereal and Plantation Crops

2.1 **Rice.** During the year, satisfactory progress was made in rice research, especially in the breeding projects. These covered fertilizer response, non-lodging and non-shedding, and resistance to blast, salinity, drought, deep water and high altitude. The improved Indica Japonica varieties of the different States are proposed to be subjected throughout the country to a uniform yield test in 1961-62.

2.1.1 Further progress has been made in the sphere of fundamental work done at the Presidency College, Calcutta. The technique for the culture of dissected embryos of paddy has been standardised.

2.2 **Wheat.** The coordinated Wheat Rust Control Scheme continued its work of breeding rust-resistant high yielding varieties with quality grain and other desirable agronomic characters. As a result of this, derived lines of N.P. 710 and N.P. 7, 8 individually resistant to the three rusts and those of C. 281 and C. 591 resistant to black rust, were developed at the Indian Agricultural Research Institute.

2.2.1 At Wellington, seed of the newly evolved brown rust resistant dicoccum strain, N.P. 200 was multiplied. New dicoccum strains with complete resistance to both the black and brown rusts and suitable for wheat cultivation in Peninsular India were also evolved.

2.3 **Maize.** The coordinated Maize Breeding Scheme that has been in operation since 1957 has made a major advance and four new hybrids have been released. They have been obtained by crossing Indian, North and South American and Carribean varieties of Maize. These have been named Ganga Hybrid Makka 1, Ganga Hybrid Makka 101, Ranjit Hybrid Makka and Deccan Hybrid Makka. The first two are suitable for the Indo-Gangetic plains. Ranjit Hybrid Makka is recommended for South Rajasthan, Gujarat and Maharashtra. The last named hybrid, viz., Deccan Hybrid Makka is intended for the rest of Peninsular India.

2.3.1 During the year, more than 7,000 lb. of seed of these four hybrids have been produced and are being distributed to the farmers of all the maize-growing States. These developments unfortunately do not cover the hilly areas and the work of evolution of a suitable variety for these areas is being vigorously pursued.

2.4 **Jowar.** This most important millet of Central and Peninsular India, received special attention at the PIRRCOM Stations. The local varieties are being systematically collected for detailed study. In addition, a large number of varieties belonging to Africa, have been collected with the help of the Rockefeller Foundation. This collection was personally done by the R.F. Staff and has been grown throughout the country. A few useful types, resistant to specific pests and diseases and possessing special characters evolved by the crossing of all the improved Indian jowar varieties with the male sterile variety Kafir 60, the underlying idea being to impart hybrid vigour, as in the case of maize.

2.5 **Pulses.** Improvement work on Moong, Urd, Arhar, Chana, Kulthi and Cowpea was in progress in the States of Andhra Pradesh, West Bengal, Madhya Pradesh, Kerala, Assam and Madras. The Conference of Pulses Research Workers which met during the year recommended, among other things, that:

(a) A coordinated programme of research on pulses covering aspects of breeding, agronomy, diseases, pests and nutritive value of pulses should be organized.

(b) Some regional centres might be set up for carrying out research on pulses, keeping in view the requirements of the region.

During the Third Plan period these recommendations would be implemented.

2.6 **Tobacco.** A new strain of Bidi Tobacco, K. 20 was recommended in place of K. 49, on account of its superiority in yield. Lanka 27, a country cheroot variety was found suitable for the "Lanka" areas of Andhra Pradesh. It was found that the Rangpur type of wrapper tobacco could be successfully grown in the shade in Cooch Bihar. P_4, a strain of chewing tobacco yielding 20 per cent more than the existing type is being popularised in Gujarat. The *hooka* and chewing variety Bori Bharao-10 was found superior to the local variety in North Bihar conditions.

2.7 **Coconut.** Research work relating to introduction and study of exotic varieties of coconut, hybridization, cultural and manurial experiments and investigations on the pests and diseases of the coconut palms were continued at the Central Coconut Research Stations of Kasaragod and Kayangulam and the Regional Research Stations located in the States of Kerala, Mysore, Madras, Andhra Pradesh, Maharashtra, Orissa and Assam. Eighty-six coconut nurseries were developed producing 12·7 lakh seedlings of superior quality.

2.7.1 On the technological side work was taken up for the preparation of activated carbon from the shell, solvent extraction of oil cake, utilization of the cake for human consumption and preparation of vinegar from *neera*.

3.0 Agronomy

3.1 The main agronomical researches carried out during the year may broadly be classified into investigations on: (a) Fodder and Forage, (b) Green Manuring, and (c) Weed Control.

3.2 **Fodder and Forage.** Fodder and forage investigations were in progress in ten locations, viz., in Andhra Pradesh (Rajendranagar), Bengal (Haringhatta), Bihar (Dumaron), Bombay (Poona), Madras (Coimbatore), Madhya Pradesh (Seoni and Nabibagh, Bhopal), Mysore (at Dharwar, Kudige and Mandya) and at the I.A.R.I. The objectives of these coordinated studies included: (a) production of suitable short season fodder types for "catch" cropping in between the staple rabi and kharif crops; (b) formulation of suitable grass-legume mixtures to get high tonnage of nutritious forage, and (c) evolution of improved varieties of annual and perennial grasses and legume fodders under different environmental conditions and raising the more promising among them under optimal farming conditions. For special areas like droughty or water-logged conditions and also for pasture purposes, promising species were discovered. Agronomical trials including, among others, seeding methods, rate and spacing and manuring were conducted and useful results have come out. For example, manurial trials indicated generally the utility of nitrogenous manuring for grassy fodders, while the legume types were more responsive to phosphate manuring than to N.

3.3 **Green Manuring.** Green manuring investigations were in progress in five stations, i.e., Rajendranagar (Andhra Pradesh), Sabour (Bihar), Poona (Maharashtra), Mandya (Mysore), Kanpur (U.P.) and Jabalpur (Madhya Pradesh). The broad objective of (a) study of promising green manuring plants and their influence on the yield of major staple crops, and (b) evolution of suitable types of plants and techniques to fit into the existing cropping practices, in mixture as well as in crop sequences. The possibility of multipurpose legumes like black and green grams, guar, and cowpea for different systems of rice cultivation was noted at Rajendranagar. Growing of leguminous crops in between was found to be advantageous to the main crop, viz., pulse varieties in cotton or sugarcane at Poona and Mandya, Sannhemp at the rate of one row in six rows of jowar at Rajendranagar

and *A. americana* in maize at Sabour. Legume fodders like *Vicia*, *Hubam clover* or berseem were found to be good for late paddy rotation at Kanpur.

3.4 **Weeds.** Coordinated weed control investigations were in progress in nine locations, viz., Andhra Pradesh (Lam), Assam (Jorhat), Bombay (Nagpur), Himachal Pradesh (Solan), Madhya Pradesh (at Gwalior and Sehore), Punjab (Ludhiana), Rajasthan (Ajmer) and U.P. (Agra). The main lines of investigations included : (a) formulation of weedicidal technique for the control of common crop weed *in situ*, and (b) measures to deal with the pernicious waste-land weeds like *kans*, *hariali* and nut-grass.

3.5 **Soil Science and Agricultural Chemistry.** Various aspects of Soil Science and Agricultural Chemistry such as land reclamation, nitrogen fixation, phosphate utilisation and micro-nutrient studies were undertaken in the different State research stations during the year. The studies at Ludhiana and Poona have shown that micro-nutrient deficiencies are widespread in the soils and correction is essential for optimal crop production.

4.0 Plant Diseases

4.1 The betelvine wilt disease continued to cause concern and anxiety to the cultivators of Madras State. The State has proposed a scheme to take simultaneously into account horticultural, pathological and cultural aspects of prevention and control.

4.2 **Citrus.** The bacterial canker of citrus caused by *Xanthomonas citri* has been in existence in this country for the past several decades but has remained largely uncontrolled by the chemicals commonly in use for the control of plant diseases. At the Kodur Fruit Research Station, a new approach through the application of neem oil has shown some promise while at the Annamalai University the possibility of using antibiotics for the purpose is being explored.

4.2.1 The coordinated scheme for investigation into the causes and behaviour of the die-back disease of citrus and for the determination of suitable control measures in operation at Gonicoppal in Coorg (Mysore State) for the mandarin orange and at Shrirampur in Maharashtra confirmed that more than one virus including the dreaded *Tristeza* was involved. Studies are now being intensified for the isolation of suitable rootstocks for the commercial scion varieties in the tracts. Whatever be the cause for the ' die-back ', the ultimate control of any lasting value would seem to lie in the propagation of these varieties on a resistant rootstock.

4.3 **Banana.** Since its first appearance in the Kerala State in 1943, the bunchy top of banana has spread very widely causing heavy damage in some of the important banana growing areas. Since one of the major agencies for spread of this virus disease is an insect vector viz., the banana aphid, methods for its control were the subject of a research scheme in progress in the Kerala State.

4.4 The virus disease ' Papaya leaf mosaic ' has been responsible for serious loss to papaya growers in the Maharashtra State since no variety under cultivation

was seen to be resistant to the infection. In a scheme of research on this subject at Poona, a wild resistant type, viz., *Carica cauliflora* was introduced for hybridisation with the local varieties and to evolve thereby disease resistant types.

4.5 **Cardamom.** Among the maladies afflicting this important foreign-exchange earner, 'Katte'—a virus disease—is the most insidious in its effects. The affected clumps in the plantation decline in yields but do not die. The planters are, therefore, averse from uprooting the diseased plants which though uneconomic, yet bear a little crop. The eradication campaign has to be accompanied by a concerted effort to replace the vacancies with disease-free seedlings. A review of the progress made under the control schemes in Mysore and Kerala has underlined the need to strengthen the staff and provide them with additional powers to operate under a Pest Act. Action on these lines is being proposed.

4.6 **Mango.** Mango malformation characterised by transformation of the inflorescence into a compact mass of sterile flowers in the adult plants and production of numerous vegetative shoots at the growing point or in the axil of a leaf in the case of seedlings is responsible for heavy losses to the mango industry. The disease has been prevalent in India since 1910 or so and is now spreading fast in most of the mango-growing areas of the country. The Council appointed an expert sub-committee to go into the question and formulate a comprehensive scheme of investigation. This has now been received and is currently under consideration by the several Committees of the Council.

4.7 **Trials of Fungicides.** With the growing demand from farmers for fungicides to save their crops from the several diseases due to which crippling losses frequently occur, a spate of proprietory products have entered the market. The farmer now faces a situation in which he is unable to decide which particular product among the several available for purchase would meet his needs best. To assist the farmers in this regard, a coordinated scheme of the Council is in operation in Madras, West Bengal, Punjab and at the Indian Agricultural Research Institute, New Delhi. These schemes are making available information of regional interest in respect of the several fungicides that are available in the market.

5.0 Entomology and Animal Pests of Crops

5.1 Variability in the reaction of different insects and of the several developmental stages is an important factor in the choice of a suitable insecticide and its formulation for crop pest control. A scheme for investigation into this problem has been in progress at Punjab University since 1959. Another scheme for a study of the rate of decomposition of insecticidal deposits of DDT, Nicotine, BHC and Pyrethrin on agricultural crops with a view to evaluating the duration of their toxic action was continued at the Osmania University. Such an investigation would help in modifying the physical and other characteristics of insecticides so as to improve the retentivity of their effects under field conditions on crop pests. Data on a variety of crops like wheat, maize, tomato, peas and bhindi were gathered.

In a third scheme for research on the toxicology and adverse effects of synthetic pesticides in progress at the Agricultural Research Institute at Coimbatore, it was observed that systemic chemicals were capable of causing leaf injury in crops such as ashgourd, tomato and brinjal and the indiscriminate employment of such chemicals was not, therefore, warranted.

5.2 **Field Rats.** It is estimated that the damage caused by these rodent pests of field crops is substantial but there is as yet no satisfactory method for their control due to their peculiar habit of living in field burrows. In a scheme in operation at Rajendranagar (Andhra Pradesh), their life history is being worked out with a view to determining vulnerable points through which methods for their control could be evolved.

5.3 **Crop Pests and Weeds.** A scheme for survey of beneficial coccinellids and investigations on their utilization in the control of aphids, coccide and mite pests of crops in Mysore State was started in November, 1959. Field observations on the occurrence of different beneficial coccinellids have been recorded along with the species occurring with their hosts.

5.3.1 A subject of no small interest has been brought to light in Rajasthan during the year. It has been observed that the wool on sheep was being damaged by the spiny fruits of *Xanthium strumarium* which occurs as a weed in grazing areas in that tract. The Commonwealth Institute of Biological Control in Bangalore has submitted a scheme for its biological control which is currently under the consideration of the Council.

6.0 Manures and Fertilizers

6.1 **Fertilizers.** The importance of fertilizers in increasing crop production has been well recognised in India, particularly in irrigated farming. A fertilizer plan was prepared in the beginning of 2nd Plan estimating the requirement of N, P, K fertilizers as 0·370 million tons of nitrogen, 0·12 million tons of phosphoric acid and 30,000 tons of K_2O for obtaining increased yield of food grains to meet the shortfall in food production by the end of the 2nd Plan. A programme to produce the required quantity of N and P fertilizers within the country was undertaken. To ensure the offtake of contemplated production and to obtain maximum returns from investment in fertilizers, various schemes were undertaken to popularize the new fertilizers and fertilizer mixtures in particular and to study the behaviour of fertilizers under cultivators' field conditions.

6.2 **Fertilizer Demonstrations.** This scheme was started in 1954-55 and continued to be in progress during 1960-61. About 4,000 tons of different fertilizers including urea, ammonium sulphate, nitrate, calcium, ammonium nitrate, nitrophosphate and fertilizer mixtures were supplied free to the cultivators in States and Union territories. Nearly 98,730 demonstrations were laid during the year on all the important food and cash crops on Development Blocks and elsewhere. The demonstrations have further familiarized the cultivators with the new

fertilizers and the usefulness of the application of phosphate and potash to crop. This has resulted in increase in the demand for fertilizers over the previous year. Thus the demand for urea, ASN and CAN has risen to 197,000 metric tons, 230,000 m. tons and 112,000 m. tons respectively in 1960-61. The demonstrations were conducted in 1960-61 and consequently the popularity of these new fertilizers has increased and the demand in 1961-62 rose by 55,000 m. tons of urea, 77,000 m. tons of ASN and 2,00,000 tons CAN. The consumption of superphosphate in 1960-61 was about four lakh tons, and the demand in 1961-62 has risen to five lakh tons of this fertilizer. Fertilizer mixtures are also being demonstrated for the last five years.

6.2.1 Yield data from demonstration plots continued to be collected by the field staff of State Agriculture and Development departments and are being analysed and interpreted by the Statistical Wing of the I.C.A.R.

6.3 **Model Agronomic Experiments.** The Model Agronomic Experiments in different soil climatic regions in the country were continued. Thirty-four such centres were established with the object of studying more intensively, manurial requirements of important crops of the region and other related agronomic factors. The programme consists of:

(i) the response of various crops to different nitrogenous, phosphatic fertilizers;
(ii) crop response in relation to fertilizer and irrigation levels;
(iii) method and time of application of fertilizers;
(iv) inter-relationship of fertilizers and cultural practices; and
(v) residual effect of fertilizers.

The number of experiments conducted at these centres during the year was about 200.

6.4 **Simple Fertilizer Trials.** As an extension of the above programme, simple fertilizer trials have been laid out on cultivators' fields in representative areas of 150 districts having assured rainfall or irrigation facilities. The main object of this scheme is to work out manurial schedules for the areas represented by these centres. About 10,000 trials have been laid out during the year. Model Agronomic Experiments and Simple Fertilizer Trial schemes are under the control of the Indian Agricultural Research Institute.

7.0 Agricultural Engineering

7.1 The implements in use by most cultivators in India are generally of the indigenous pattern. Improved implements have not found their way to the average cultivator. A comprehensive programme for improved agricultural implements to be launched during 1961-66 has been prepared by the Working Group on Improved Agricultural Implements consisting of the representatives of the Ministries of Commerce and Industry, Community Development and Cooperation, Food and Agriculture, Indian Council of Agricultural Research, Planning Commission, etc.

7.2 The second conference on production, demonstration and popularization of Improved Agricultural Implements was held under the auspices of the Indian Council of Agricultural Research in October, 1960, in which representatives of all Ministries concerned viz., Ministries of Food and Agriculture, Commerce and Industry, Community Development and Cooperation, Planning Commission, representatives of manufacturers, farmers, etc. participated. The following main recommendations were made by the Conference:

(i) Agricultural Engineering Sections of the State Agricultural Departments should be strengthened.

(ii) Adequate credit arrangements for the implements programme should be made.

(iii) Special Units for demonstration and popularization of improved agricultural implements should be built up district-wise in the States.

(iv) Concession in the price of the improved agricultural implements should be given in the early stages.

(v) All extension training centres should be equipped with workshops.

(vi) List of principal implements suitable for being popularized in the States should be prepared.

(vii) Detailed estimates of requirements of iron and steel for manufacture and servicing and repairs of improved agricultural implements during the Third Five-Year Plan should be prepared.

(viii) During the Third Five-Year Plan arrangements should be made for establishing at least one centre in each State run by the State Governments for the manufacture of improved agricultural implements to which other manufacturers can turn for technical advice.

(ix) One research-cum-testing centre for improved agricultural implements should be set up in each State during the Third Five-Year Plan.

(x) Arrangements for close cooperation between those engaged in the manufacture of implements and concerned with research and extension should be made. For this purpose Advisory Boards/Committees consisting of representatives of various concerns should be constituted in each State.

Expeditious action is being taken on the recommendations of the Conference.

7.2.1 The centre at Indian Agricultural Research Institute has been functioning and a second centre at Coimbatore was started in May, 1960. Sanction for the setting up of two more centres at Poona and Burdwan has also been conveyed to the respective State Governments. Proposals to set up similar centres in other regions and States and Union Territory of Himachal Pradesh have also been formulated.

7.2.2. A model scheme for the popularization and demonstration of improved agricultural implements during the Third Five-Year Plan has been prepared. The scheme aims at demonstrating improved agricultural implements on cultivators' fields, training of village artisans for repairs and servicing their implements, convenience of loans and easy purchase system, etc. The requirements of

different States for suitable improved agricultural implements are being assessed for manufacturing them on a large scale.

7.2.3 The Indian Council of Agricultural Research has sanctioned a scheme for awarding prizes with a view to encouraging improvements in agricultural implements.

8.0 Horticulture

8.1 **Regional Fruit Research.** Eight fruit research stations viz., at Mashobra (H.P.), Abohar (Punjab), Saharanpur (U.P.), Sabour (Bihar), Shillong (Assam), Poona (Maharashtra), Kodur (Andhra Pradesh) and Chethalli (Mysore) have been established to cater to regional research needs. Additional sub-stations to deal with such of the fruits as are not represented at the Regional Stations have also been listed. During the year, three more regional stations and four sub-stations were sanctioned.

8.2 **National Hortorium.** Under this scheme three Plant Introduction Stations are to be established as part of the National Hortorium, one for the temperate region at Mashobra, another for the sub-tropical region at Meerut and a third for the tropical region at Hessarghatta. A comprehensive collection of indigenous and exotic horticultural plants will be stocked at the centres to form a live herbarium from which material could be drawn by the experimental centres in the country for breeding purposes. During the year, work at the Hessarghatta station was started.

8.3 **Fruit Production.** The national scheme for the development of fruit production sanctioned during the Second Plan period continued to progress. During the Second Plan, an additional area of 1,65,000 acres was brought under orchards. Short-term measures of rejuvenation through pruning, manuring, spraying and top-working were applied to an area of about 1,32,000 acres of the existing orchards. Under a programme intended to provide for a thorough course in practical horticulture, 4,400 persons have so far been trained, of whom 1,350 received the training during the year.

8.4 **Mango.** The research programme on this fruit was further expanded for undertaking at the regional stations the major problems of selection of the most suitable commercial varieties or their evolution through planned hybridisation, determination of compatible rootstocks, crop regulation, control of fruit crop, assessment of manurial requirements and prolonging storage life.

8.5 **Banana.** Research work on the banana continued to progress in Madras, Maharashtra, Andhra Pradesh and West Bengal. Highlights of the work during the year were the isolation of the Amritsagar variety for its resistance to the Panama disease, and the hastening in the maturity of the bunch by a fortnight secured through covering it with polyethylene bag.

9.0 Vegetables and Floriculture

9.1 Schemes of improvement of individual vegetable crops, related to varieties, time of sowing, spacing, manuring, control of pests and diseases, storage etc., were continued in the Punjab, West Bengal, Maharashtra, Himachal Pradesh, Uttar Pradesh, Andhra Pradesh and Madras States.

9.2 A scheme for the development of vegetable production in the country was finalised during the year. An outlay of Rs. 75,00,000 has been proposed. The objectives are to produce, multiply and supply seeds of promising vegetable varieties and provide expert advice to the growers on the agronomic requirements of individual vegetable crops and the plant protection measures to be adopted to ward off the damage and losses caused by pests and diseases.

9.3 Research on vegetable crops has to be reorganized on a regional basis. Provision has been made for the establishment of five Regional Stations and 12 Sub-stations in the country in the Third Plan period.

9.4 **Seed Certification Scheme.** In order to make available to the growers vegetable seeds of requisite purity and performance, a seed certification scheme was implemented during the Second Plan. So far, the States of Jammu and Kashmir, Punjab, Bihar, West Bengal, Mysore and Andhra Pradesh have started the work. Assam have undertaken to implement the scheme.

9.5 **Ornamental Gardening.** The coordinated scheme for the development of floriculture in the States as well as one for the maintenance of seeds and bulbs of imported ornamental plants took shape during the year. A survey for study of the ' cut-flower ' industry in the country was commenced. This is expected to help in the formulation of proposals for its systematic development. An Officer on Special Duty was appointed to serve as understudy to the Japanese expert who was invited to help in the laying out of Japanese style gardens in selected places in India. A beginning has been made by this team in a portion of the Roshanara Garden in Delhi.

10.0 Commodity Crops

10.1 **Cashewnut.** This valuable dollar-earning nut crop continued to receive special attention both in regard to research and development. A target of nearly three lakhs of acres was fixed in the Third Plan period through departmental efforts in the several States and arrangements were made for supply of the seed requirements through a coordinating agency. Technical assistance, the grant of long-term loans and assignment of land for planting of cashew were the other facilities made available in each State. Schemes for research on this crop were in operation in Mysore, Kerala, Andhra Pradesh and Maharashtra States.

10.2 **Spice Crops.** Spices have a recognised place now among the agricultural commodities produced in India for their earning of foreign exchange. Several schemes of research have, therefore, been sponsored by the Indian Council

of Agricultural Research. Their chief objectives are the isolation of superior planting material for supply to the growers, determination of optimum cultural, manurial and irrigation practices for each of the major spice crops in the more important regions where they are grown on a commercial scale, and standardization of the processing methods for placing in the market products fit for international acceptance. Study of pests and diseases of each of the crops in the field as well as of the storage products were also given prominent attention so that crop losses may be avoided and the blemishes to which the products become liable by their incidence may be eliminated.

Pepper maintains its prime position among the spice-crops of India and the largest area under it is in Kerala State. Two research schemes on this crop were in progress at Thodupuzha and Taliparamba. The major items of study covered by the current programme were comparative yield trials, hybridization to combine high yields, wilt resistance and other desirable economic characteristics, determination of a manurial regimen which will promote yields at economic costs, choice of suitable ' standards ' for the vine, and delineation of suitable pruning and training system and root-stock trials with special reference to overcoming the wilt incidence to which the commercial varieties are known to be susceptible.

10.3 **Cardamom.** This is also a spice crop of importance to India for its export value. Four research schemes are in progress. In Mysore, the general improvement aspects are receiving attention at the Mudigere Research Station. During the year, seven promising selections have been isolated. In another scheme operating in the same State for the eradication of the ' Katte ' virus disease, nearly 25,000 seedlings screened for freedom from the diseases were supplied to the planters. At the Pampadumpara Research Station, Kerala, the studies are in their fifth year. Type No. 7 and Hybrid 6 have been isolated as superior yielders.

10.4 **Ginger.** Research schemes are in progress in Kerala, West Bengal and Assam. In the Kerala scheme, the Walluvanad type has recorded an eightfold yield over the seed rate. A Chinese type with extra-size rhizomes with the lowest fibre content has been isolated.

10.5 **Turmeric.** Research has been in progress in Andhra Pradesh over the past five years. A remarkable degree of varietal resistance to leaf-spot diseases has been noted, and this will be usefully exploited in breeding work.

10.6 **Chillies.** Schemes for improvement are in progress in West Bengal, Andhra Pradesh, Mysore and Madras States. In addition, diseases of chillies are being studied at the Indian Agricultural Research Institute at Delhi. The isolation of mosaic resistant plants in the F_2 generation of two crosses at the last mentioned centre is of particular interest.

10.7 Studies on miscellaneous spice crops like cloves, nutmeg and cumin, among other, are also in progress in Madras and Rajasthan States. The precocious bearing tendency of grafts of nutmeg on *Myristica fragrans* and *M. beddomeii* is a feature of considerable economic significance brought out as a result of these studies.

10.8 **Beverage Crops.** The work under the scheme for economic research on cocoa was continued at the Kallar and Burliar Fruit Stations in Madras State.

10.9 **Essential Oils.** Lemongrass is an essential oil-yielding plant of major importance in the economy of Kerala State and a scheme for its improvement which was started in 1957 continued to progress. Five selections superior to the local types in yield and with a high content of citral were isolated. Another scheme for research on vanilla which was also sanctioned in the same State was taken up during the year.

10.10 **Medicinal Plants.** With the increasing demand from the pharmaceutical industry in the country for the raw medicinal plant materials, due importance is being given by the Council to schemes concerned with their production. The centre set up at Jammu for this purpose continued to investigate the best methods and practices for economical cultivation of medicinal plants while the introduction and acclimatization of exotic plants were undertaken at Srinagar and Sanasar. Another scheme to serve the interests of the southern regions was established on the Annamalais in Madras State.

11.0 Agricultural Education

11.1 **Undergraduate Education.** The number of Agricultural Colleges rose during the Second Plan, from 30 to 53, whereas the intake capacity of the colleges increased from 1,989 to 5,600. The intake capacity of the Veterinary Colleges during the year, under report increased slightly to 1,300 from 1,280 in the preceding year.

11.2 **Postgraduate Education.** The establishment of a National Post-graduate Centre for Agriculture at the Indian Agricultural Research Institute, the development of post-graduate facilities for veterinary science at the Indian Veterinary Research Institute and the setting up of three regional post-graduate centres for agriculture and four for veterinary represented the significant steps taken to foster higher education during the Second Plan.

11.3 **Agricultural Universities.** July, 1960, marked the opening of the first Agricultural University in India at Rudrapur in U.P. with the active assistance of the Central Government. During the year only two constituent colleges of this University could be established, viz., one for agriculture and the other for veterinary medicine, with current admission capacity of 150 and 100 respectively. The Government of India set up a Committee of experts with Dr. R. W. Commings as the Chairman, to scrutinize new proposals for setting up Agricultural Universities and help the States to develop proposals and the draft bills for introduction in the Legislature. A provision of Rs. 2 crores has been made in the Third Five-Year Plan to assist these Universities.

11.4 **Refresher Courses.** The refresher courses organized by the Indian Council of Agricultural Research have served a useful purpose in raising the standard of teaching. The courses organized during the year covered animal husbandry, extension methods and plant diseases for the benefit of teachers from Agricultural Colleges and courses in Animal Nutrition for teachers of Veterinary

Colleges. An all-India symposium on Pharmacology was also organized during the year.

11.5 **Inter-institutional Arrangements.** The T.C.M. have extended material aid to Agricultural and Veterinary Colleges through the provision of U.S. technicians, facilities for advanced study by the staff of these institutions in the U.S.A. and the supply of equipment and books to strengthen the teaching and research programmes. The total estimated cost of the Project on 31-3-1961 was $ 8,941,694. The break-up of the aid rendered during the Second Plan period and the year under report as on 31–3–1961 is indicated below:

	Second Plan Period	1960-61	
U.S. technicians posted in Colleges.	76	24	
Participants	330	99	*of these 30 Fellowships are yet to be utilized.
Books and equipments	$27,32,744·00	1,00,000	

11.6 Under a separate contract the T.C.M. have provided assistance for planning and developing the U.P. Agricultural University at a total cost of $7,81,500 excluding the rupee aid. This comprises of $3,00,000 for books and equipments and $4,81,500 towards the technicians and deputation of participants. The Government of the U.S.A. have also agreed to reimburse to the Government of India Rs. 1 crore out of the PL 480 proceeds towards the erection of buildings and laboratories of this University.

11.7 **I.C.A.E.** In pursuance of the recommendations made at the Fourth Session of the Indian Council of Agricultural Education, a Committee has formulated specific recommendations for introducing important curricular reforms in Agricultural Colleges. The National Council for Rural Higher Education has since accepted the recommendations of the I.C.A.E. to upgrade the certificate course in Agriculture in Rural Institutes to a three-year course. Committees set up by the I.C.A.E. have also made important recommendations for linking up the syllabi of the Multi-purpose High Schools with that of the Agricultural Colleges as well as to list out agricultural topics for the preparation of text-books for elementary schools. A model scheme for establishing regional centres for the training of technicians for maintenance and repair of equipment has been formulated. The inspection teams set up by the I.C.A.E. to examine the suitability of some of the colleges for developing into a regional post-graduate research institute have submitted their report to the Government with respect to two of these.

11.7.1 A list of foreign books of value to agriculture and related sciences has been compiled for bringing out cheap editions of these in India for use in our institutions.

11.7.2 A handbook on Agricultural Education in India was compiled and sent to the press. Two issues of the Indian Journal of Agricultural and Veterinary Education were brought out during the year.

12.0 Animal Breeding

12.1 In order to bring about a rapid increase in the milk production of cattle in hilly and heavy rainfall areas, an experimental scheme for cross-breeding the non-descript cattle in these areas with Jersey bulls was launched by the I.C.A.R. This scheme is being worked in 12 units in the different parts of the country. An attempt is being made to combine the high-yielding qualities of exotic breeds with the disease resistant qualities of Indian cattle. As the first generation female progeny has come into production, systematic milk recording has been undertaken and it is found that the total lactation yield in the cross-bred progeny is several-fold greater than their dams. Regular breeding and production records in all the centres are maintained.

12.2 As it is not possible to import Jersey bulls in large numbers, a Central Artificial Insemination Station has been established at Bangalore from where Jersey semen is supplied to most of the units of the co-ordinated cross-breeding scheme. In order to meet the demands for the units located in the eastern parts of the country, a regional station has been established at Tollygunge in Calcutta. In all the units, animals are bred by artificial insemination.

12.3 A comparative study to find out whether "selective breeding" or "grading up" would be the proper method of upgrading the non-descript animals in different parts of the country is being made at seven centres. The object of the study is to find out which of the two methods of breeding is more economical so that it may be adopted as a general policy for improvement of cattle in these areas.

12.4 At the Aarey Milk Colony, where a large number of buffaloes are maintained for milk production, a progeny testing scheme has been introduced. Under the scheme, ten buffalo-bulls are being tested by scientific methods to evaluate their sire index. This would help the widespread use of the tested bulls and the selection of future breeding bulls from among their sons.

12.5 Buffaloes are known to be seasonal breeders. This results in uneven production and supply of milk for human consumption. The causes for this irregular breeding during summer months are being investigated under another scheme which is in operation in U.P.

12.6 Under another scheme, the physiological significance of hump, dewlap and sheath of cattle in the maintenance of their body functions is being investigated. This is likely to produce useful information about the functions of these parts of the body and help in formulating future animal breeding programmes.

12.7 In order to keep the diluted semen in a viable condition so as to have access to interior-most and inaccessible places, preliminary trials were undertaken for finding out the possibilities of deep freezing of semen. These trials have given satisfactory results and it has now been decided to take up deep freezing of semen for limited field use at three units of the cross-breeding scheme.

12.8 **Cattle Sterility Scheme.** As Indian cattle are known to suffer a good deal from infertility, the study of this problem has been taken up under a co-ordinated scheme. This scheme was initiated in the First Five Year Plan with the

main object of (a) conducting investigations on the infertility of cattle with a view to developing appropriate remedial and preventive measures and (b) improving the teaching of Animal Gynaecology and Obstetrics including Artificial Insemination and Physiopathology of reproduction.

12.8.1 In the First Plan, the investigation was taken up in six States and at the I.V.R.I. In the Second Plan, it was extended to five more States. Under all these centres, considerable investigations were carried out on State farm animals and causes leading to infertility among them were fully investigated. Village animals and those belonging to private owners were also included under investigations. In several States permanent chairs of the Professors of Animal Gynaecology and Obstetrics have been created on the termination of cattle sterility scheme.

13.0 Animal Nutrition

13.1 The Council continued to finance research programme being conducted at the Regional Animal Nutrition Stations, I.V.R.I. and the various State Institutes. At the Southern Regional Animal Nutrition Research Station, Bangalore, studies were conducted in the nutritive value of spent lemon grass, a bye-product of the lemon grass oil industry in Kerala. This bye-product which was hitherto not utilized was found to be superior to cereal straws and compared well with some of the hays as a livestock feed. Another trial was conducted on tapioca as a high energy feed for cattle. It was observed that tapioca could be fed to working bullocks up to 50 per cent of the concentrate ration replacing totally cereals and grams. At the Western Regional Station, Anand, apart from common feeds chemical composition of *Neem*, Khejada and Pala leaves were studied. The leaves were found to be richer in protein during summer, the content being as high as 18·62 per cent in *Neem*, 50·38 per cent in Khejada and 14·76 per cent in Pala. The nutritive value of common grasses was also studied. At Haringhata, Eastern Region, a study of legumes, grasses, cereals and mixed fodders revealed that quality of maize fodder improved appreciably when grown in combination with the legume P. Mungo, the next best combination being maize and sannhemp and *jowar* and sannhemp.

13.2 At the B.R. College, Agra, during the investigation on nutritional requirements of buffaloes it was observed that buffalo bull calves remained in good health at a lower level of protein i.e. 0·35 lb. of D.C.P. per 1,000 lb. body weight, a standard much below the one recommended so far. The experiment is being repeated to confirm the results.

14.0 Animal Diseases

14.1 A number of schemes for investigation and control of diseases of cattle, buffaloes, sheep, goats, pigs, camels and poultry, and schemes on certain specific

disease problems are being implemented in almost all the States and at the I.V.R.I., Mukteswar and Izatnagar. The progress reports and technical programmes of these schemes have been scrutinized and co-ordinated by the Council.

14.2 **Bovine Mastitis.** The co-ordinated scheme for investigation of bovine mastitis was continued at the I.V.R.I. and in the States of U.P. and Madras. The scheme has already terminated in Punjab, Mysore and Bombay. Systematic investigations on the incidence of mastitis in various State-owned and private breeding and dairy farms were carried out. In cattle, the incidence varied from 11·8 per cent to 24·8 per cent and in buffaloes from 5·8 per cent to 50 per cent. Treatment with various drugs and anti-biotics was also being tried with varying results.

14.3 **Brucellosis.** Schemes for investigation of brucellosis were in operation in the States of U.P., Madras and Bihar. As a result of systematic work carried out in U.P., the incidence of the disease in State herds has been brought down from 6·0 per cent to 0·9 per cent. Survey to assess the incidence of the disease was being continued.

14.4 **Humpsore.** A coordinated scheme for the control and eradication of humpsore in cattle is in operation in the States of Orissa, West Bengal and Assam. Treatment with various drugs was being tried. It was found that application of an ointment containing phenothiazine, D.D.T., and carbolic acid gave comparatively satisfactory results.

14.5 **Contagious Bovine Pleuro-pneumonia.** A scheme for the control of contagious bovine pleuro-pneumonia is being operated in Assam State since 1951. As a result of the vaccination and control measures persistently adopted, Goalpara District, which was once the main seat of infection is now almost free of the disease.

14.6 **Fascioliasis.** A number of schemes for the control of parasitic diseases, especially liverfluke infestation, are being carried out in the States of Mysore, Bihar, Himachal Pradesh and Jammu and Kashmir. Under these schemes, the infestations are controlled by regular administration of anti-parasitic drugs. As a result of this mass treatment, the incidence of this disease has been considerably reduced.

14.7 **General Disease Investigation Schemes.** Schemes of general disease investigation are sponsored by the I.C.A.R. with a view to investigating the etiology, mode of spread and control of infectious, non-infectious and obscure diseases. In most of the States, where such schemes have been in operation for a number of years, the work has been taken up on a permanent basis by the State Governments.

14.7.1 Pigs. Schemes for investigation of diseases of pigs are functioning in the States of Andhra Pradesh and Punjab. A systematic survey of the incidence of pig diseases has been carried out and assistance was rendered for the prevention and control of pig diseases.

14.7.2 Sheep and Goats. A survey of the incidence of the diseases of sheep and goats was conducted in Rajasthan and U.P. Pneumonia in sheep and goats

was found to be common in both these States. Investigation into certain obscure diseases like contagious agalactia and lumbar paralysis was also carried out.

14.7.3 CATTLE. Scheme for investigation of diseases of cattle are in progress in the States of Gujarat, Rajasthan and Himachal Pradesh. A survey on the incidence of the various contagious diseases of the livestock was conducted. Vaccination trials with C. welchii type D vaccine prepared at the I.V.R.I. were conducted in Gujarat State.

14.8 **Rinderpest Eradication Scheme.** The scheme was continued in the States of Orissa, Bihar, West Bengal, Bombay, U.P., Punjab, Jammu and Kashmir, Madhya Pradesh, Delhi and Rajasthan. During the year under report, the work under the scheme was completed in Andhra Pradesh, Maharashtra and Himachal Pradesh. Since the inception of the scheme, nearly 934·37 lakh animals have been vaccinated, out of which over 181·00 lakh were vaccinated during the year 1960-61. Over 366 lakh doses of freeze dried goat tissue vaccine were produced. In order to check the ingress of the disease through the movement of animals from adjoining countries, 17 land Quarantine Stations have been established in the States of U.P., Bihar, West Bengal, Assam and Punjab.

15.0 Dairy Development

15.1 During 1960-61, in addition to schemes on dairy husbandry (included under Animal Husbandry) ten schemes of the Council on Dairying were in operation, as compared to eleven, last year. Three schemes terminated in 1959-60 and three in 1960-61. Three schemes were started in 1960-61. A brief account of these schemes is given below.

15.2 The three schemes which terminated in 1959-60 related to (i) survey of chemical and bacteriological quality of milk supply for Delhi City, (ii) studies on the pasteurization of milk in relation to destruction of pathogenic bacteria and improvement in keeping quality, and (iii) studies on the preparation of dairy sanitizers for use in organized village milk producing and handling units. The results of the first scheme have been used for laying down the treatments that should be given to milk at the Delhi Dairy to ensure a high quality product to the consumers. A quality control organization now in the Dairy is continuing the work of quality control initiated under the scheme. Under the second scheme the time-temperature combination essential for the heat treatment of market milk for making it reasonably free from disease producing organisms and improving its keeping quality have been laid down. The effect of heat on the nutritive value of milk has also been studied. Under the third scheme, the cleaning and sterilizing ability of different materials easily available in India have been studied. Mixtures and cleaning progress processes have been evolved for the cleaning of utensils in village dairies. Cleaning by these methods will ensure not only the removal of milk solids but will also ensure the

destruction of bacteria so that the milk kept in the utensils is safe and of high quality. The methods evolved are now being tested.

15.3 The three schemes which have terminated during 1960-61 included surveys of the bacteriological quality of the milk supplied by the Kaira Union, Anand and in Allahabad town. These schemes, and the one at Delhi referred to above, were a part of a co-ordinated scheme under the general guidance of the Director, N.D.R.I. The scheme at Anand has yielded information on which quality standards for the collection of milk for peparation of milk products can be based. These products cannot be made unless the milk is of a very high quality. Utilization of these standards will make it possible for the Union to manufacture dried milk, concentrated milk and cheese. The scheme at Allahabad has yielded useful results which will be utilized by all milk unions in northern India for the improvement of the quality of milk delivered in the cities. The third scheme which terminated during 1960-61 related to the sterilization of milk, cream and sweetened and flavoured milk at Aarey Milk Colony. The results of this scheme have enabled Aarey Milk Colony to find an answer to all the technical problems which arose in the production of those products and were peculiar to Indian milk and local environments. The other milk schemes, such as the ones at Delhi and Calcutta are also likely to take up the production of sterilized milk on the basis of results of this scheme.

15.4 The schemes in operation during 1960-61 relate to the standardization of accelerated oxidation test to determine shelf life of ghee at N.D.R.I., development and standardization of methods for detecting adulteration and estimating major constituents of milk at the Punjab University and preparation of Edam and Gonda cheeses at Aarey. The results of these schemes will be of considerable economic importance to the dairy development schemes to be initiated during the Third Five Year Plan. A new and simple method of detecting adulteration in milk has been evolved and is now being tested out under field conditions. Under the last scheme, cheese has been produced which has already been accepted extensively in Bombay markets and has met the demand for cheese which could not be satisfied after its import was stopped. Further improvements in the quality of this cheese are now being attempted.

15.4.1 As stated above, three new research schemes were initiated during 1960-61. One relates to the survey of bacteriological quality of milk supplied in Trivandrum in Kerala. The scheme was in operation only for a short time during the year under report. The other scheme relates to the studies on the economics of specialized dairy farming under various conditions in India. This research scheme is located at the Bara Jt. Farming Cooperaive Society Ltd., Patiala. Under this scheme, specialized dairy farming as a system will be compared with the production of cash crops so that the economics of various methods can be studied and advice on systems of farming to be followed under any fixed set of conditions can be based on results of research. Similar schemes approved for other centres are also likely to be initiated soon and these will give a co-ordinated picture of the possibilities in different regions of the country.

16.0 Sheep and Goat Breeding

16.1 With the object of increasing sheep and wool production, coordinated research schemes on regional basis have been sponsored by the Council in all the States where sheep rearing is an important occupation. In the Himalayan region, emphasis is laid on evolving fine-woolled sheep by cross-breeding the local stocks with the rams of imported breeds, while in the plains, selection among the existing breeds is resorted to for improving the quality of wool. In the western zone of Deccan Plateau, sheep carry coloured fleeces and research in improving sheep aims at converting the existing flocks into white-woolled breeds yielding superior fleeces. The majority of sheep in the eastern peninsular region do not yield wool and are maintained for meat production. Studies in the potentiality of meat production are the main lines of research in this region.

16.2 **Himalayan Region.** Research schemes for evolving new breeds were undertaken in the States of Jammu and Kashmir, Himachal Pradesh and in the hill districts of U.P. At the research station at Banihal, a new fine-woolled strain of cross-bred Merino is being evolved and a selection among the experimental flocks for obtaining greater uniformity in wool quality and body confirmation is in progress. The hairy coarse staple existing in the local wools is eliminated by introducing the blood of the Merino sheep. The local sheep yielded 1·5 lb. of wool while the fleeces of the cross-bred sheep weigh 3·5 to 4 lbs. The trial in cross-breeding the local sheep with the imported Rambouillet rams is also in progress. The cross-bred rams are being utilized in the rural areas for studying their heritability. It is observed that the progeny born of the Rambouillet cross-bred rams is sturdier than the lambs of the Merino origin. Similar work is being undertaken at the sheep breeding farms at Sarahan in Himachal Pradesh and at Pipalkoti in the Garhwal district of U.P.

16.3 **Dry Northern Plains.** There are a number of distinct sheep breeds in the dry northern plains, particularly in Rajasthan and in North Gujarat. The main defects of wool are the presence of coarse kemps or brittle fibres and lack of uniformity in the staple. In order to breed superior strains yielding uniform wool, selective breeding programmes were undertaken at the sheep breeding farms established near Bikaner in Rajasthan and at Patan in the Mehsana district of North Gujarat. Studies on heritability of different characters of wool of the Chokla breed are being carried out at the sheep farm, Bikaner. Important characters such as medullation, fineness, staple length and density are being studied for individual sheep and their performance records maintained. Similar work is in progress at the sheep farm, Patan for Katchi sheep. The preliminary work has indicated that selection for non-hairiness can be carried out by fleece examination. It appears that yield and staple length are not highly heritable characters while selection for finer fleeces could be carried out on the basis of the performance of individual rams. Further research in these aspects is being continued so that specific methods could be applied for mass selection. At the livestock farm, Hissar, a flock termed Bikaner, has been evolved to yield non-hairy lustrous fleece. Basic studies in the methods of sampling of fleeces and heritability are in progress at this farm.

16.4 **Deccan Plateau.** Research in evolving new breeds suited to the environmental conditions of the Deccan Plateau is mainly carried out at the sheep farms at Poona in Maharashtra and at Ootacamund in the Madras State. The scheme in operation at Poona aims at selecting white fleeced strains by selective-breeding and by cross-breeding. A small flock of Deccani sheep yielding non-hairy fleece of superior quality useful for apparel, has been evolved by continuous rigorous selection on the basis of wool quality of individual sheep. Simultaneously, cross-breeding the local types to the Merino and Rambouillet rams is in progress. As no more Merino rams are available, inter-breeding among the existing cross-bred progeny is being continued. The F_2 graded Merino rams are utilized for concentrating the blood of the Merino. Selected rams are yielding 6 to 8 lb. of wool while the average of the flock is 3·5 lb. per sheep. The first generation progeny is born to the imported Rambouillet rams and the yields of wools of this generation range from 3 to 4 lb. as against 14 oz. obtained from the local sheep. Trials in the rural areas have indicated that crossing the local sheep to the F_1 rams increases the wool quantity by 30 per cent in their progeny.

16.4.1 The Nilgiri range, particularly the rolling hills near Ootacamund affords facilities for raising sheep imported from temperate climates. Trials in cross-breeding local sheep with the rams of Romney Marsh breed were undertaken at a sheep farm situated on the Wenlockdowns. A flock of 300 Nilgiri ewes have been bred with Romney Marsh rams and the first generation progeny comprising 120 ewes is being raised. The Nilgiri sheep yielded 1 lb. of wool while the average weight of the fleece of the first generation is 3 lb. The size of the sheep has almost doubled. The quality of the staple and fineness of the fibres in the fleeces of the progeny has improved. Recently a small flock, comprising 15 ewes and 5 pure bred Romney Marsh rams was imported.

16.4.2 A coordinated research programme for studying the potentiality of the principal sheep breeds of the eastern peninsular zone was undertaken in the States of Andhra Pradesh, Madras and Maharashtra. The principal sheep breeds under investigation are the Bannur, Nellore and Mecheri. Heritability studies in regard to meat production are in progress.

16.5 **Pilot Scheme.** In order to define the grades of wools produced by important sheep breeds which contribute to the bulk of annual wool clip of the country and to evaluate the different grades as regards their utility, a pilot scheme has been undertaken in Rajasthan. The entire Magra breed zone, spread over three districts, is being surveyed and fleeces collected for detailed analysis, physical and commercial.

16.6 **Goat Breeding.** In order to replace the present goats in certain parts of the country with new types which could be raised as graziers and not browsers on tree leaves, the Council sanctioned a coordinated scheme for breeding of Angora goats in the States of Himachal Pradesh, Maharashtra, U.P., and Andhra Pradesh. The Angora goat yields a fine, strong and lustrous fibre, more costly than high grade wools and useful for being utilized in the cottage industries. The trials have indicated that this goat, if imported in sufficient numbers, would be a great asset to the rural economy of the country.

17.0 Hides and Skins

17.1 Three research schemes for the improvement of hides and skins for manufacture of leather have been in operation at the Central Leather Research Institute, Madras. The object of one of these schemes was to improve the quality of shoe uppers and industrial leathers made from hides and skins by chrome tannages. For effecting this improvement, investigations were made to determine the various products that are formed as a result of chemical reactions which take place when tanning liquors are prepared from chromium salts and to study the effects of these products in tanning and consequent properties of the finished leather. Under this scheme, useful results were obtained and the observations indicate that the leather shavings liquor gives the benefits of both chrome tanning and vegetable tanning.

17.2 Under another scheme, research processes for manufacturing fat liquors from Indian oils to make the Indian tanning industry self-sufficient in respect of these essential treatment materials were investigated. Results obtained during the year indicate that fat liquors based on sulphated fish oil are suitable for glace kids, as well as in case of semi-chrome shrunken grain leathering. It is also found to give good results in case of Box and Willow sides, certain upholstery leathers, glove and garment leathers.

17.3 Under a third scheme, research was carried out profitably to utilize the waste leather shavings and cuttings of tanneries and shoe factories in making leather boards for use in the footwear and leather goods industry. The boards manufactured are found to be satisfactory and already their production on a pilot basis has been undertaken. The finished products are being sent to different concerns for a test report. Open demonstration of the process is also being arranged.

17.4 A new scheme to improve the leather-making qualities of raw hides and skins obtained from dead animals has been initiated from 1st April, 1961. The object of the scheme is to work out processes for treating hides and skins with some preservatives immediately after flaying and find out the preservatives which could be made available in the centres keeping in view their cost.

18.0 Poultry Breeding

18.1 The Council continued to finance schemes on research of poultry husbandry including housing, feeding and poultry technology. The schemes are being operated in the various States and at the Indian Veterinary Research Institute.

18.2 A pilot project with a view to establishing chick hatchery and poultry processing plant located at Katpadi in Madras State continued to make good progress. Under this project a commercial hatchery has been set up and 20 village units have been established in the surrounding area. The chicks are supplied to them to saturate the area with White Leghorn birds. Hatching eggs are also collected. During the year, over 10,000 chicks were supplied. Nearly 40,000 lb. of poultry mash was sold to these village units on " no profit no loss " basis, the

cost being recovered from the eggs collected from these units. Another investigation on purchasing village poultry and fattening the same at the farm and selling as dressed birds revealed that such a project was profitable. The scheme has demonstrated that a commercial hatchery can be set up under Indian conditions. An identical scheme being run at Martandam in Madras State also made considerable progress during the year under report. Over 6,000 chicks were supplied to the units functioning in the area of operation.

18.3 Scheme under the Council's co-ordinated project on cheap poultry houses which aims at studying the effect of different types of houses built from locally available material on the growth, health and the productivity of the birds continued in Orissa, Madras, Bihar and Madhya Pradesh. The results achieved in Orissa and Bihar indicated that the houses built with kerosene tins gave good results.

18.4 Another important project to investigate the possibilities of judging level of production of poultry from body characteristics revealed that the persistency could be judged from the replacement of primary feathers.

18.5 Outstanding results have been achieved under the Council's scheme for investigating the Broiler production being operated at Hyderabad. Under this scheme a quick growing strain of White Rock chicks imported from Israel achieved an average weight of 3·31 lb. in ten weeks time. The experiment is being repeated and the stock is to be multiplied or initiated with identical experiments in the other States.

19.0 Apiculture

19.1 A Regional Bee Research Station functioned at Coimbatore from December, 1951 to 31st March, 1960. Another Regional Bee Research Station has been sanctioned in Himachal Pradesh, which has come into operation from May, 1959. At these Research Stations, investigations to breed better type of bees with a view to producing more honey, were taken up. Trials were also conducted in the use of substitutes for pollen during the lean periods.

20.0 Pisciculture

20.1 Two schemes on Pisciculture were in operation during the year under report. In Uttar Pradesh, research on fish ecology was undertaken. Sixty-six varieties of fish were identified and their nature of habitat and food habits were studied. In Andhra Pradesh, hydrobiological and faunistic survey of the Godavari estaurine systems were taken up with a view to making a comprehensive and systematic survey of the hydrobiological conditions, plankton, bottom fauna, shell fisheries, etc. A check list of all the forms identified has been prepared.

21.0 Statistical Research

21.1 The Institute of Agricultural Research Statistics continued to carry out fundamental and applied research in Agricultural Statistics and impart post-

graduate and in-service training in agricultural and animal husbandry statistics. It also continued its advisory work on statistical aspects relating to the design and layout of agricultural and animal husbandry experiments, the interpretation of their results, and examination of the technical programmes and annual progress and final reports of the Council's schemes. A large number of research investigations were undertaken during the year and full advantage was taken of the Mechanical Tabulation equipment recently installed at the Institute in the analysis of the data collected during the course of these investigations.

21.2 Agricultural Experimentation

21.2.1 Coordinated Agronomic Trials. The programme under the scheme consists of complex agronomic experiments at selected centres spread over all important agro-climatic regions of the country and simple fertilizer trials in randomly selected cultivators' fields. During the year under report, the statistical analysis of 77 experiments conducted in 1957-58 on wheat and 89 experiments in 1958-59 on paddy was completed and reports were prepared.

21.2.2 Simple Fertilizer Trials. About 10,000 experiments were conducted on cultivators' fields in the year 1960-61 in 118 districts spread over 14 States and Union Territories. Yield data of 7,650 experiments conducted during the year 1959-60 in 109 districts were received in the present year.

21.2.3 Analysis of Long-term Manurial Experiments. The Institute continued to examine the data of long-term manurial experiments carried out in different parts of the country with a view to assessing the effect of repeated application of fertilizers and manures. During the year, data from four agricultural stations in Madras, two in Andhra Pradesh and one in Uttar Pradesh were studied. These experiments covered wheat, paddy, maize and cotton.

21.2.4 Fertilizer Demonstration Trials. This scheme was initiated in the year 1954 in collaboration with the Technical Cooperation Mission of the United States of America, with a view to popularizing the different types of inorganic fertilizers produced or planned to be produced in the country. During the year, results of about 1,000 demonstrations laid in Rabi 1957-58, about 3,700 demonstrations laid in Kharif 1958-59 were analysed and the reports prepared.

21.2.5 National Index of Field Experiments. The scheme was started by the Council in October, 1955, with the object of collecting and maintaining at a central place the data of all agricultural field experiments conducted in this country since 1935. So far, the data of about 17,000 experiments have been collected by the special staff posted in different States for the purpose. Complete data consisting of about 7,800 experiments for the period 1948-53 have already been collected and a compendium of the results is being published.

21.2.6 Bacteriological Quality of Milk. With a view to collecting information on the bacteriological quality of milk supplies reaching Allahabad city and collecting basic data on other related aspects, the Council has sanctioned a scheme for a period of three years since July, 1957. The programme consisted of

collection and study of samples from four categories of milk suppliers, namely, (i) transporters, (ii) city producers, (iii) co-operative union, and (iv) organized dairy. The data for the first year of the enquiry were analysed and the results presented to the scientific committees.

21.3 Operational Research and Assessment Surveys

21.3.1 YARDSTICKS OF AGRICULTURAL PRODUCTION. At the instance of the Planning Commission, the Institute has made a start in formulating yardsticks of agricultural production from several improved measures, such as fertilizers, manures, irrigation, etc. During the year under report, besides bringing the yardsticks on fertilizers and manures up-to-date, further work has been done to evolve composite yardsticks for manures and fertilizers.

21.3.2 RINDERPEST ERADICATION SCHEME. The assessment of progress of work under the Rinderpest Eradication Scheme was carried out from the weekly returns received in the prescribed proforma from the field staff working in the States.

21.3.3 BENCH MARK SURVEY. In order to step up agricultural production by concentrating limited available resources in selected areas having optimum conditions for increasing production, the Government of India in cooperation with the Ford Foundation has launched an intensive agricultural District Programme popularly known as Package Programme in several selected districts located in different States. An important item of work under the programme is to undertake a comprehensive survey to determine the present status of agricultural development in the districts which will provide the Bench Mark data. This will be followed by periodic surveys for assessing the progress made under the programme. These surveys will in particular provide useful data on crop production, land utilization, irrigation, the extent of improved agricultural practices followed by the farmers, credit and marketing facilities made available and actually utilized by the farmers, capital formation in agriculture sector and any impediments in the implementation of the programme.

21.3.4 ASSESSMENT OF INCIDENCE OF DISEASES IN RICE CROP. This scheme was initiated in Cuttack district of Orissa State in June, 1959, with a view to evolving suitable sampling technique for obtaining quantitative estimates of incidence of pests and diseases on rice crop and to study the nature of their relationship with yield.

21.3.5 PILOT SURVEY OF FERTILIZER PRACTICES. A pilot survey was conducted in Meerut district of U.P. in 1959-60 to study cultivation practices of farmers in that district. A similar survey was also conducted in Alleppy district of Kerala State. The data collected in these surveys are being analysed.

21.4 **Cost of Production of Milk.** As reported earlier, with a view to evolving a suitable sampling technique for assessment of the cost of production of milk in the urban and suburban areas of large cities and typical rural areas with potentiality for milk production, two surveys, one in Delhi (1953-55) and other at Madras

(1957-59) were completed, and the third one in Calcutta and a rural area of West Bengal is in progress since January, 1960.

21.5 **Training.** In the examinations held during the year under report, nine students were declared successful in the Professional Statisticians' Certificate Course, 16 in the Senior Certificate Course and 17 in the Junior Certificate Course. Eleven students have submitted their thesis in partial fulfilment for the Diploma Course in Agricultural Statistics.

A list of other schemes and surveys in progress during the year is given below: (1) Analysis of Data on Goat Breeding Scheme, Hissar, Punjab (1939-57); (2) Estimation of the amount of milk taken by a suckling calf; (3) Scheme for assessing cost of cotton and rotation crops in principal cotton and oilseed producing regions in India; (4) Study of cost of production of vegetables in Punjab; (5) Pilot survey for studying cost of production of wool and rearing sheep; (6) Pilot study of feeding and rearing practices of sheep and yield of wool—Gujarat and Rajasthan; (7) Study of milk yield, breed, feeding and management practices of cattle and buffaloes; (8) Pilot scheme for study of poultry practices and production; (9) Sampling investigation for study of spices and horticultural crops.

22.0 Publications and Information

22.1 The Publication Wing of the Council issued (1) six monographs, (2) six books, (3) four reports and (4) 19 bulletins and continued the publication of nine periodicals during the year (Appendix 14), as against (1) four monographs, (2) five books, (3) two reports and (4) fifteen bulletins during the previous year.

22.2 **Agricultural Information Service.** The Council started the Agricultural Information Service in Hindi and regional languages in January, 1961. Through this service an attempt has been made to carry scientific knowledge and information on agricultural and allied matters of topical interest from the laboratory to the tiller of the soil. The service has been projected with particular reference to the region, the season and individual crops grown and is being released in *Hindi*, *Punjabi*, *Telegu*, *Tamil*, *Kannada*, *Marathi*, *Gujerati* and *Bengali—One hundred and thirty four* journals in Hindi and regional languages with a total circulation of two million have so far begun to publish the feature articles released under this Service.

22.3 **Sales and Distribution.** A total revenue of Rs. 5,65,290/- was earned from the sale of publications. The total revenue from advertisement published in the Council's journals was Rs. 71,960/- as against Rs. 65,473/- during the previous year.

22.4 Library

22.4. Acquisitions. The number of publications added during the year is about 1,880 as against 1,717 in the previous year. 14,000 copies of current issues of periodicals and 5,500 copies of reports and bulletins were received.

22.4.2 DOCUMENTATION SERVICE. A total of 1,912 articles relating to Agriculture and 491 articles relating to Animal Husbandry were indexed, processed and distributed to Colleges, Research Institutes/Stations and Farms.

23.0 Commodity Committees

23.1 Indian Central Oilseeds Committee

23.1.1 Agricultural research and development schemes in respect of 97 projects involving a sum of Rs. 1,53,13,663 are in operation. Six new schemes were sanctioned during the year at an estimated cost of Rs. 2,75,154.

23.1.2 INTEGRATED OILSEED DEVELOPMENT SCHEMES. With a view to supplementing the efforts to increase production under the Central and State Schemes during the Third Five Year Plan, the Committee sanctioned 'Oilseed Extension Schemes' for 11 States at an estimated cost of Rs. 27·72 lakhs to be met in full by the Committee. In addition to the above, the Committee sanctioned special schemes for plant protection measures at an estimated cost of Rs. 34·51 lakhs.

23.1.3 The Committee decided in March, 1961 that "Integrated Oilseeds Development Schemes" should be launched in the States during the Third Five Year Plan, instead of three different categories of schemes. The target of oilseeds production for the Third Five Year Plan was fixed at 99·62 lakh tons as against 75·5 lakh tons for the Second Five Year Plan. In March, 1961 the Committee considered and recommended for sanction the "Integrated Oilseed Development Schemes" received from the States of Andhra Pradesh, Madhya Pradesh, Madras, Maharashtra, Mysore, Orissa, Punjab, Uttar Pradesh, West Bengal, Gujarat and Kerala at an estimated cost of Rs. 2,67,23,737. The Committee's share of expenditure on these schemes was not to exceed Rs. 75 lakhs during the Third Five Year Plan.

23.1.4 TECHNOLOGICAL RESEARCH. Substantial progress was made on the 16 projects on Vegetable Oil Research sanctioned at the five Research Institutions during the Second Five-Year Plan. The project on 'Non-edible Oils' at the National Chemical Laboratory, Poona terminated in November, 1960. The following projects were extended for a further period of one year on the existing basis at an estimated cost of Rs. 5·25 lakhs:

At the Research Laboratory, Hyderabad	(1) Oilseeds Milling, (2) Cottonseed Oil, (3) Castor Oil, (4) Activated Earths and Carbons, (5) Fatty Acids, and (6) Surface Coatings.
At the Oil Technological Institute, Anantapur	(1) Oilseeds Milling, (2) Fatty Acids, and (3) Surface Active Agents.

Harcourt Butler Technological Institute, Kanpur
(1) Oilseeds Milling,
(2) Solvent Extraction, and
(3) Non-edible oils.

At the Department of Chemical Technology, Bombay
(1) Fatty Acids, and
(2) Non-edible oils (Solvent extraction combined).

23.1.5 The Ministry of Food and Agriculture, and the Council of Scientific and Industrial Research have allotted a sum of Rs. 25 lakhs and Rs. 5 lakhs respectively for vegetable oil research during the Third Five Year Plan.

23.1.6 The following new ad-hoc schemes were also sanctioned during the year under reference:

(1) A scheme for Indian standards for raw and washed cottonseed oil at the Regional Research Laboratory, Hyderabad and the Oil Technological Institute, Anantapur at a cost of Rs. 12,843 and Rs. 10,540 respectively for two years.
(2) A scheme on development of an economic method for extraction of oil from kamala seed at the Department of Chemical Technology, Bombay at a cost of Rs. 13,934 for two years.
(3) A scheme for routine oil analysis work at the Oilseeds Section in Madras State at a cost of Rs. 31,106 for three years.
(4) A pilot scheme for introduction and testing of red oil palms in the coastal and Malnad regions of Mysore State at a cost of Rs. 33,970 for five years.

23.2 Indian Central Cotton Committee

23.2.1 During 1960-61, the Indian Central Cotton Committee, in collaboration with the State Governments and other institutions, financed 57 research schemes at a cost of Rs. 14·26 lakhs to the Committee for the improvement of the cotton crop, determination of the optimum conditions under which it should be grown, for maximizing its yield and for the control of the pests and diseases infesting it. Twenty seed multiplication and distribution schemes were also financed at a cost of Rs. 2·01 lakh to the Committee to facilitate the rapid spread of pure seed of improved varieties in the different tracts. The important results obtained from these schemes during 1960-61 have been summarised below:

23.2.2 Three new strains, viz., 'Raniben' for the *desi* cotton growing tract of Uttar Pradesh, 'Badnawar-1' for the Dhar Cambodia tract of Madhya Pradesh and 'Adonicum' for the Mungari areas of Andhra Pradesh and Mysore were evolved and released for general cultivation. By virtue of their superiority in yield, ginning outturn and spinning performance over the existing strains, the cultivation of these new varieties in place of the old is estimated to fetch an increased monetary return per acre of Rs. 20, Rs. 120 and Rs. 70, respectively.

23.2.3 In Mysore, another new strain, B.C. 1, was found in the Bagalkot area, to be superior to the local cotton in yield and quality. It will be released to the

growers after the superiority in spinning performance through mill tests has been tested.

23.2.4 In the Cambodia tract of Madras State, another new strain, E.L. 192, was observed to record (in experimental plots) the highest yield of 1,598 lb. of seed cotton per acre and to combine also a very desirable fibre length of 1·25 in. It is proposed to test next year the performance of this strain under actual farming conditions.

23.2.5 The results of the earlier experiments on the effectiveness of DDT, BHC and Endrine concoction in controlling jassids and whitefly and in checking other pests such as bellworms were confirmed by later results.

23.2.6 Andrews (Sea Island) cotton was grown over an area of some 5,419 acres in the States of Kerala (3,569 acres) and Mysore (1,850 acres). From this crop, about 4·75 lakhs lb. of seed cotton of I sort and 9,115 lb. of II sort have been secured so far. Seed distribution work to cover the targeted area of 8,000 acres in Mysore and 6,500 acres in Kerala during the year is in progress.

23.2.7 An area of about 108 acres were raised under a hybrid cotton during the year from which about 74 bales of extra long staple cotton were obtained.

23.3 Indian Central Jute Committee

23.3.1 Agricultural Research. During the year under review it was found that the fibre percentage of standing Jute plants can be correctly estimated by stripped bark method without removing them from the field. Field observation so far made in the experiment on the influence of temperature on the collar rot and root rot diseases in jute seedlings showed that high temperatures slightly favour infection. Investigations on different fungal cultures were also carried out.

23.3.2 Technological Research. Technological research showed that, it may be possible to have an appreciably higher yield viz., 55-60 per cent by mechano-chemical methods. A method of making reasonably cheap boards for packing from jute sticks has been developed. This material was considered satisfactory by local consumers.

23.3.3 Economic Research. Investigations in the economics of jute growing carried out at ten selected centres put the average cost of jute production at Rs. 15·91 per maund against Rs. 9·33 for paddy. These conclusions, however, need further investigation before they can be accepted. A comparative study of input and output under improved and traditional methods of jute cultivation was made with encouraging results.

23.3.4 Development. Jute development work was continued according to the programme of the Second Plan in all the six jute-growing States by the use of improved seeds, fertilizers, and line sowing and ante disease measures.

Demonstrations of improved methods of jute cultivation were continued at the extension centres round the Central Station and also in the Jute Development Blocks in Bihar, Assam, U.P. and Orissa.

23.4 Indian Lac Cess Committee

23.4.1 The production of lac during the year under review was 13,14,000 maunds, 1,55,000 maunds more than the 1959-60 figure. The proposals made in the Second Five Year Plan to establish 14 nucleus broodlac farms were carried through. The scheme for the establishment of 50 broodlac farms by the State Governments has also been completed according to schedule. The Committee imparted training in lac cultivation to workers in National Extension Service, Community Development Blocks, Tribal areas and State Forest Departments.

23.4.2 At the Indian Lac Research Institute, Namkum, a bush host has been found which takes the Kusumi strain of lac and the results obtained in the year under report confirmed that this plant could be economically and commercially exploited for lac cultivation on a plantation scale. Other fields of study included genetical—both by adopting the ordinary crossing methods as well as by irradiating strains of lac insects—and biological control of enemy insects, and cytological and physiological investigations.

23.4.3 A quick method of determining hot alcohol insolubles of lac was successfully worked out reducing the time taken for conducting the tests to a tenth of the standard method. The bleach index was considerably lowered by using potassium permanganate instead of the conventional washing soda.

23.5 Indian Central Coconut Committee

23.5.1 The Central Coconut Research Stations at Kasaragod and Kayangulam continued research work on introduction and study of exotic varieties of coconut, hybridization, cultural and manurial experiments and investigations on the pests and diseases of the coconut palm. The surveys of the coconut growing tracts to find out promising varieties of coconut for propagation and the soil survey to find out suitable tracts fit for coconut cultivation, taken up during the previous years, were continued during the year under report.

23.5.2 The Regional Coconut Research Stations at Neyyattinkara and Kumarakom (Kerala State), Arsikere (Mysore State), Veppankulam (Madras State), Ambajipeta (Andhra Pradesh), Bhatya (Maharashtra State), Sakhigopal (Orissa) and Kahikuchi (Assam) also continued to function.

23.5.3 Seventeen coconut nurseries with a total production target of 3.35 lakh seedlings per annum were receiving grant-in-aid from the Committee. Besides, a coconut nursery with a production target of 10,000 seedlings attached to the Central Coconut Research Station, Kasaragod was also functioning during the year. In addition to these, 57 coconut nurseries with a target of 7·02 lakh seedlings started under the Second Plan and 11 coconut nurseries in the N.E.S. Blocks with a target of 58,000 seedlings were also functioning. The Committee also procured and supplied 1,65,720 seed coconuts to the Governments of West Bengal, Assam and Tripura.

23.5.4 A cheaper edition of the "Coconut Palm—A Monograph" was brought out. The monthly Bulletin in English, Malayalam and Kannada and the quarterly "The Indian Coconut Journal" continued to be published. The Committee participated in 14 exhibitions during the year. These occasions were suitably utilized to educate the public on the different aspects of improved methods of coconut cultivation, etc.

23.5.5 Training in different aspects of coconut cultivation was also imparted to the officers of the Regional Coconut Research Station, Andhra Pradesh, Gramasevaks, etc. at the Central Coconut Research Station, Kayangulam.

23.6 Indian Central Arecanut Committee

23.6.1 The Indian Central Arecanut Committee continued to organize agricultural and technological research on arecanut during the year. About 2,70,000 standard maunds, 1,00,769 quintals of arecanut valued at Rs. 58,36,736 had to be imported into the country till the end of February, 1961 to supplement internal production. To step up production of arecanut and to improve its quality, the Central and Regional Arecanut Research Stations under the Committee continued to intensify their activities by undertaking field experiments. A phased comprehensive programme for both the Central and Regional Arecanut Research Stations was finalized and implemented. The Arecanut Technology Unit, at the Central Food Technological Research Institute, Mysore, evolved a technique of preserving fresh mature nuts. The technique was being tried as a pilot project.

23.6.2 The various technological schemes at Delhi, Gauhati and Kerala Universities, the Forest Research Institute at Dehra Dun and the Central Leather Research Institute at Madras continued to make satisfactory progress. The marketing schemes showed considerable improvement during the year and the supply of fertilizers and fungicides to arecanut growers was also intensified in most cases. The area and production schemes in the States of Kerala, Assam, Maharashtra, Mysore, Madras and Andhra Pradesh recorded further progress, while Orissa has just implemented the scheme. The layout of the scheme for West Bengal was under scrutiny. The preliminary report on the Pilot Scheme on Cost of Cultivation was under preparation.

23.6.3 While the Committee operated Category 'A' Schemes which consisted of both research and development, it scrutinised the progress under Category 'B' Schemes sponsored by the States in collaboration with the Centre. The simple manurial trials in cultivators' gardens laid out under three strata, viz., coastal, sub-montane, and plain regions in the States of Kerala, Mysore, Assam and West Bengal were continued. Fertilizer loans were granted to the States of Kerala, Madras, Orissa and Assam. Some of the States could not advance the loans for one reason or the other. As against the target of 35,05,000 seedlings 12,39,175 seedlings were distributed among the growers in the States of Andhra Pradesh, Assam, Kerala, Mysore, Orissa, West Bengal and the Andamans upto the period ending 31-3-1961.

23.7 Indian Central Tobacco Committee

23.7.1 During the year under report the Committee continued research on the various types of tobacco at its research institutes and stations and sub-stations, besides running a number of schemes in conjunction with State Governments and other institutions and under the Second Five Year Plan.

23.7.2 Work done in various tobacco growing areas is mentioned in the following paragraphs:

23.7.2.1 *East Godavari Area.* The results of economic importance were obtained in this area in the following items of work: (1) thickness of the soil covering for different manures given as basal dose in flue-cured Virginia tobacco nurseries; (2) effect of nitrogen application as a top-dressing in the early stages of growth of the tobacco crop; (3) effect of phosphorus application as a basal dose followed by nitrogen top-dressings on the number of transplants; (4) effect of crow-boring and mulching on the yield and quality of cigarette tobacco; (5) study of five important characters of the Hicks variety of tobacco; (6) preliminary study on the relative resistance of 27 varieties of tobacco to the powdery mildew fungus; and (7) efficacy of Basudin and Folidol sprays on the crop.

23.7.2.2 *Guntur Area.* The value of application of groundnut cake for raising seedlings in a nursery was studied in the trials made in this area and the results were useful.

23.7.2.3 *Vedasandur Area.* The following items of research yielded results of economic importance in the experiments conducted in this area: (1) best combination of cultural and manurial treatments to raise a crop of chewing tobacco of better quality; and (2) study on the chemical changes during curing and fermentation of cigar tobacco.

23.7.2.4 *Pusa Area.* Results of economic importance were obtained in the experiments held in the area: (1) value of mustard cake treatments (nitrogenous fertilizers and organic manures) on hookah and chewing tobacco; and (2) trials showing the superiority of the improved variety Bori-Bharao-10 over the farmer's bulk.

23.7.2.5 *Dinhata Area.* In this area following trials yielded results of economic importance: (1) leaf yield superiority among the five type of the Motihari tobacco; and (2) establishment of the superiority among other wrapper varieties of tobacco.

23.7.2.6 *Anand Area.* Some useful results were obtained in the trials held in this area in the following cases: (1) effectiveness of post-topping irrigations on the yield of a tobacco crop; (2) relationship of the keeping quality of tobacco to the amount of irrigation given to the crop and to the application of nitrogen in the form of ammonium sulphate; (3) efforts to evolve a hybrid strain superior to Kelin 20 of bidi tobacco which has been released to the growers; (4) chemical determination of colour in the case of bidi tobacco in the upper and early matured leaves as compared to the lower and late matured ones; and (5) relative costs of various insecticides and their effectiveness.

23.7.2.7 *Hunsur Area.* In this area the following results of economic value were obtained in the under-mentioned trials: (1) application of 40 lb. of nitrogen combined with certain quantities of phosphorus pentaoxide (P_2O_5) and potassium oxide (K_2O) on the cigarette tobacco crop; (2) trials on the six varieties of flue-cured Virginia Tobacco for yield of green leaf, establishing the superiority of Super Gold over others; (3) effect of sulphur application on the incidence of powdery mildew in contrast to the earlier results.

23.7.2.8 *Punjab Area.* In this area the following items of work yielded results of economic importance: (1) study of the popularity of Desi tobacco; and (2) trials on the application of nitrogen doses with other nutrients for a certain higher yield of snuff tobacco along with spacing patterns.

23.7.3 Development and Training. The Central Tobacco Research Institute, Rajahmundry, distributed 7,500 lb. of pure and processed seeds of Harrison Special, Chatham, Debrest and Lanka tobacco for the Second Five Year Plan schemes. In all, enough seedling were produced to cover an area of 1,00,000 acres under tobacco cultivation with improved strains.

23.7.4 The Bidi Tobacco Research Scheme, Anand, provided 1,260 lb. of seed and 37,51,000 seedlings to the ryots of Gujarat. The Bidi Tobacco Research Sub-station, Nipani, provided 350 lb. of improved seed to the growers of Nipani tract of Mysore State.

23.7.5 The free training in improved methods of tobacco cultivation, handling and curing at the Central Tobacco Research Institutes, Rajahmundry, Anand, and the Bidi Tobacco Research Sub-station Nipani, was continued.

24.0 General: Practical Utility of Results Achieved

24.1 **Wheat.** A big step forward in the arrest of the annual drain in food production by loss of wheat grain caused by rust diseases in the field estimated to range from five to ten per cent, is the development of lines of the strains N.P. 710 and N.P. 718 which are individually resistant to the three rust diseases and of C. 281 and C. 591 resistant to black rust.

24.2 **Maize.** The distribution of more than 7,000 lb. of seeds of four new hybrids viz., Ganga Hybrid Makka 1 and Ganga Hybrid Makka 101 in the Indo-Gangetic plains, Ranjit Hybrid Makka in South Rajasthan, Gujarat and Maharashtra, and Deccan Hybrid Makka in the rest of Peninsular India is expected to result in substantial increases in production, ranging from 20 to 40 per cent.

24.3 **Tobacco.** By the release of Bidi Tobacco No. K. 20 to replace the erstwhile strain No. K. 49, an ultimate increase in production by 12 per cent, is estimated. Similarly chewing tobacco No. P. 4 that will now replace the existing types with the cultivators would result in a 20 per cent increase over the present output.

24.4 **Coconut.** The production of 12·7 lakhs of coconut seedlings at 86 State departmental nurseries on criteria determined by research is expected after

planting in their permanent sites and in due course, to yield annually an additional 63·5 million nuts.

24.5 **Arecanut.** The distribution of 12·39 lakhs of seedlings during the year is expected to cover roughly about 2,000 acres under the crop and result in an increased production of 1,000 tons of nuts ultimately.

24.6 **Fruits.** The total additional area brought under orchards in the Second Plan period has now been computed at 1,65,000 acres which at the rate of an average production of 2 tons per acre should yield roughly about 3·3 lakhs of tons of additional protective food-stuffs to the country in the next five to ten years. Rejuvenation measures undertaken simultaneously should be able to yield an additional one lakh of tons.

24.7 **Spices.** The supply of 25,000 cardamom seedlings screened for freedom from diseases is expected to rehabilitate about 75 acres of cardamom plantation and result in an increased output of 15,000 lb.

24.8 **Cotton.** The release of three new strains viz., 'Rani Bon' for Uttar Pradesh, 'Badnawar—I' for Madhya Pradesh and 'Adonicum' for Andhra Pradesh and Mysore is estimated to yield to the farmers an increased monetary return per acre of Rs. 20, Rs. 120 and Rs. 70 respectively. Nearly five lakhs of pounds of Andrews (Sea Island) cotton seed produced in Kerala and Mysore States is expected to cover a new area of 14,500 acres in those two States.

24.9 **Jute.** Mechano-chemical methods have been determined by which jute fibre output can be increased by 55 to 60 per cent. This is a significant contribution towards increasing substantially the outturn of jute crop without increasing the area under cultivation.

24.10 **Filling up Gaps in Agricultural Research.** The need to strengthen research on crops that had not received adequate attention so far has been felt by the Council for some time past. With the commencement of the Third Plan and in the year under report, concrete measures were initiated towards this end. The preliminaries were taken in hand for the establishment of a Central Institute for research on tuber crops (other than potato) in Kerala State along with five regional stations in the States of Bihar, Maharashtra, Orissa, Uttar Pradesh and Punjab at an estimated outlay of Rs. 25 lakhs. Similarly, detailed proposals were formulated for the opening of five main and 12 regional sub-stations for vegetable research, again, at a cost of Rs. 25 lakhs. Another scheme for development of vegetable production costing Rs. 75 lakhs was finalized. This programme is now expected to foster and encourage the production of subsidiary food crops which are vital for not only providing balanced nutrition to the people but also placing at his disposal a means of supplementing his income by growing a readily saleable cash crop.

24.11 **Improvement in Organizational Structure.** The Council has now decided on the institution of a separate Cashewnut and Spices Commodity Committee in order that the production, processing, marketing and export of these crops which earn for the country annually substantial amounts of foreign exchange may receive due and adequate attention. On somewhat similar considerations, the

Council has also provided for an Agricultural Engineering Cell at its headquarters which can bestow special attention to Engineering problems.

24.12 **Improvement in Council's Finances.** The Council has endeavoured to strengthen its financial resources so as to make available to the States and other agencies funds for engaging on agricultural research, the need for which may arise from time to time on account of new and unexpected problems and for which money may not be available under the Plan. This objective has been secured to a considerable extent by a decision taken in consultation with the Planning Commission to divert to the Plan, expenditure of Rs. 1·83 crores on schemes of national importance such as the establishment of Pirrcom centres, Maize breeding, National Index of Field Experiments, Sheep and Wool Improvement, Cattle, Buffalo and Camel breeding, cross breeding of cows and opening of insemination centres. The technical and administrative responsibility of running these schemes will continue with the Council.

24.13 **Animal Diseases.** As a result of systematic work carried out in U.P., the incidence of Brucellosis in the State herds has been brought down from six per cent to 0·9 per cent. Vaccination and other control measures adopted for combating contagious bovine pleuro pneumonia in the Goalpara District of Assam, have now made that district almost free from the disease. In certain parts of the States of Mysore and Bihar the incidence of Fascioliasis has been considerably reduced as a result of mass treatment with carbon tetrachloride. Under the Rinderpest Eradication Scheme during the year, 181·00 lakhs animals were vaccinated, and 360 lakh doses of freeze-dried vaccine were produced thus bringing the total number of animals vaccinated to 934 lakhs and the quantity of vaccine produced from the inception of the scheme to 1,904 lakhs.

Treatment of Humpsore with an ointment containing Phenothiazine, D.D.T. and Carbolic acid, gave on the whole better results.

24.14 **Animal Breeding.** Studies have proved the feasibility of centralized production of semen and its utilization after transport by land and air at distant places. Crossbreeding for increased milk production has been in progress and the results obtained to-date have been encouraging; the cross-bred animals mature earlier, and the milk yield in them is greater. Under the Progeny Testing Scheme at Aarey Milk Colony, Bombay, a large number of male calves have been born and these can be relied upon to produce progeny with a higher milk potential. The reasons for the low fertility of Indian cattle are being studied under an All-India scheme and the results can be applied to the breeding of animals in the field.

In the Himalayan region a new fine woolled strain of crossbred Merino has been evolved and sturdier lambs from Rambouillet—local crosses have been obtained. Similar work is in progress at some other centres in the country. Improvement of the wool quality of sheep by selective breeding is being carried out at other centres, especially those in Rajasthan, Gujarat etc.

Graded goats obtained by crossing of the local goats in Himachal Pradesh, U.P. and Maharashtra with the Angora have been found to yield soft, lustrous hair of superior quality.

24.15 **Dairy Development.** Studies on pasteurization of milk at the National Dairy Research Institute, Bangalore have shown that exposure of milk to a temperature of 168° F. for two seconds is adequate to destroy the pathogenic bacteria in Indian milk. The adoption of this time temperature combination in the milk schemes will reduce the cost of processing without decreasing the efficiency of the process. Suitable reagents and cleaning processes have been developed for the efficient cleaning of village dairy equipment under another scheme at Bangalore. The schemes on the study of bacteriological quality of milk have given basic information on which quality control of milk collected from the villages can be based. Results of research at Bombay have shown that Indian market milk can be used for the production of high quality cheese.

24.16 **Hides and Skins.** Studies conducted on the manufacture of fat liquors from Indian oils indicated that fat liquors based on sulphated fish oil were suitable for most types of leathers. Research on utilization of waste leather shavings and cuttings from tanneries and shoe factories revealed that these could be profitably used for making leather boards for use in the foot-wear and leather goods industry.

24.17 **Animal Nutrition.** At the Animal Nutrition Centres, studies conducted to find out the nutritional value of products like spent lemon grass and tapioca revealed that the former was superior to cereal straws and that the latter could be fed to working bullocks upto 50 per cent of the concentrate ration, replacing totally cereals and gram.

Studies on the chemical composition of neem, kehjada and pala leaves indicated that these were richer in protein during summer.

24.18 **Poultry.** A pilot project on the establishment of a chick hatchery has shown that commercial hatcheries can be set up profitably under Indian conditions. Outstanding results were achieved under a scheme on broiler production with the Arboracea strain of White Rock, which is a quick growing meat strain. A gain in weight of 3·31 lb. was attained in ten weeks.

24.19 **Conclusion.** This summary of the practical results of the research carried out under the auspices and aegis of the Council would show that as a result, the science and practice of agriculture including animal husbandry has made a notable advance during the year. The year's record is one of discoveries and evolutions which increase output, which point the way to improved practices, which place in the hands of the cultivators improved agents of production, which achieve greater efficiency in animal husbandry, dairying and poultry and which bring the Council's programme for the Third Five Year Plan on the threshold of future progress on systematic and practical lines. This does not take into account many new grounds broken in the field of fundamental research which have an indirect but nevertheless far-reaching effect on many pursuits of research on utilitarian lines. The Council can look back on their achievements with a sense of satisfaction at the progress made but a vast field of unfulfilled missions and of new and promising openings still lies ahead of it. It will now be for the research workers at the Centre and the States and in various institutions to fulfill that promise and to place at the disposal of the cultivator in the field still greater openings for plenty and progress.

Appendices

APPENDIX 1

List of new schemes sanctioned

Sl. No.	Name of Scheme	Sponsoring/Government Authority
1.	Improvement of Irungu Cholam	Madras
2.	Investigation of pests on pulses with special reference to bionomic and control aspects	Madras
3.	Seed atlas	I.C.A.R.
4.	Improvement of millets (Sajja, irrigated millets and Jonna)—Coordinated scheme	Andhra Pradesh
5.	Improvement of white grain ragi	Madras
6.	Drought resistance in crop plants	Madras
7.	Physiological effect of light, etc., on isolated tissues of some tropical crops	Calcutta University
8.	Fundamental studies on embryos and organ culture	Presidency College, Calcutta
9.	Improvement of *bajra*	Uttar Pradesh
10.	Improvement of *jowar*	Uttar Pradesh
11.	Improvement of gram and *bajra* in southern districts of Punjab ..	Punjab
12.	Ergot disease of *bajra*	Maharashtra
13.	Preparation of vegetation maps of India	I.C.A.R.
14.	Investigation of paddy helminthosporic disease	Madras
15.	Physiology of lodging habit in relation to metabolism and auxin action of rice and viability and germination of rice seed ..	Calcutta University
16.	Studies on helminthosporium disease of wheat	West Bengal
17.	Investigation into ideal storage conditions for seeds of ornamental plants	Madras
18.	Establishment of a National Registration Authority for the cultivated and wild fruit plants	I.C.A.R.
19.	Control of fruit crop in Mandarin oranges	Tripura
20.	Horticultural Research	Sikkim
21.	Research on orange pests	West Bengal
22.	Investigation on the pests of important fruit crops	Madras

APPENDIX 1—Contd.

Sl. No.	Name of Scheme	Sponsoring/Government Authority
23.	Investigations on root-rot and collar-rot diseases of apple ..	Himachal Pradesh
24.	Cytogenetical investigations on banana, ananas, guava and pomegranate	Agricultural College and Research Institute, Coimbatore
25.	Establishment of a sub-station for hill bananas	Madras
26.	Establishment of a sub-station for wet land bananas	Madras
27.	Improvement of *ber* fruit	Gujarat
28.	Award of rewards to outstanding benefactors in agriculture and horticulture	I.C.A.R.
29.	Research on olive and pomegranate	Himachal Pradesh
30.	Research on grapes	Madras
31.	Physiology and growth reproduction with special reference to problem of biennial bearing in mango	Calcutta University
32.	Study of vegetative and reproductive growth in guava trees ..	Aligarh University
33.	Studies on the control of citrus canker	Annamalai University
34.	Investigation of twig blight diseases of orange (Re-allotment of funds)	West Bengal
35.	Seminar on Fruit and Vegetable Preservation, 1960	I.C.A.R.
36.	Improvement of condiments	West Bengal
37.	Improvement of minor crops	Madras
38.	Improvement of ginger and turmeric at Kandaghat ..	Punjab
39.	Investigation of diseases of cumin and fennel in Gujarat ..	Institute of Agriculture, Anand
40.	Medicinal plants	Punjab
41.	Research on cytogenetics and taxonomy of the genus Artemisia ..	Punjab University
42.	Research on Linaloe	Madras
43.	Study on foliar nutrition of crops	Kerala
44.	Investigation into certain problems of soil and plant analysis ..	Madras
45.	Study on the comparative value of organic and inorganic nutrient sprays	Madras
46.	Reclamation of saline and alkaline lands	Madhya Pradesh
47.	Maximisation of phosphate potential in soils	Andhra Pradesh
48.	Investigation of soil fertility problems and development of rapid soil and tissue tests	Government Agricultural College, Ludhiana

APPENDIX 1—Contd.

Sl. No.	Name of Scheme	Sponsoring/Government Authority
49.	Improvement of saline waters for irrigation purposes, Jodhpur ..	Rajasthan
50.	Reclamation of saline and alkaline soils	Andhra Pradesh
51.	Studies on reclamation of saline soils (Re-allotment of funds) ..	West Bengal
52.	Green manuring	Khalsa College, Amritsar
53.	Study of efficient use of water under different irrigation practices	Madras
54.	Investigation into the nutritive value of hybrid maize varieties ..	Lady Irwin College, New Delhi
55.	Acceleration of research work on hybrid maize *jowar* breeding ..	I.C.A.R.
56.	Expansion of coordinated maize breeding scheme	I.C.A.R.
57.	Institution of prizes and President's Gold Medal for outstanding contribution in the field of manufacture of agricultural implements	I.C.A.R.
58.	Trials on the production of sugar-beet.	Himachal Pradesh
59.	Investigations of seed-borne microflora on cereals	Madras
60.	Investigations into the problems of seed production of late cauliflowers in Kulu Valley	Punjab
61.	Second Conference on Production, Distribution and Popularization of Improved Agricultural Implements	I.C.A.R.
62.	Research on some South Indian mites of economic importance and their control	Madras
63.	Biological control of San Jose Scale	Jammu and Kashmir
64.	Role of legumes in the cropping pattern in the Coastal Region ..	Kerala
65.	Comparative study of incrossing *vs.* reciprocal recurrent selective crossing in hybrid poultry production	Bihar
66.	Selective breeding of the Asil breed of poultry	Madras
67.	Selective breeding of the Asil breed of poultry	Maharashtra
68.	Pilot project in day-old chick industry	Katpadi
69.	Survey of bacteriological quality of milk supply in Patna ..	Bihar
70.	Survey of bacteriological quality of milk supply in Cuttack ..	Orissa
71.	Provision of clerical assistance to Coordinating Officer of the schemes for the survey of bacteriological quality of milk ..	N.D.R.I.
72.	Improvement of leather making quality of raw hides and skins from dead animals	C.L.R.I.
73.	Investigation of bovine trichomoniasis	Bihar
74.	Contagious pustular dermatitis in sheep and goats	Bihar

APPENDIX 1—Contd.

Sl. No.	Name of Scheme	Sponsoring/Government Authority
75.	Investigations into trapa-cum-fish culture	Madhya Pradesh
76.	Increasing the fish seed potential through induced breeding and developing suitable strains of fish by selective and cross breeding	Uttar Pradesh
77.	Investigations into the causes of loss of freshness in stored fish in ice—(Research Fellowship)	Jadavpur University
78.	Acarine disease—Survey in various States	Punjab
79.	Study of the endocrinological factors in the aetiology of horn cancer in cattle	Uttar Pradesh
80.	Investigation into the control of warble infestation in cattle ..	Punjab
81.	Investigation of obscure astroentritis among cattle	Mysore
82.	Investigation of leptospirosis among domesticated animals ..	I.V.R.I.
83.	Yellow disease of cattle	Bihar
84.	Development of an improved vaccine for anthrax	Madras
85.	Popularizing ready to feed premixed poultry feed	Bihar
86.	Evolving an economic feed mixture for middle White York-Shire pigs	Madhya Pradesh
87.	Enquiry on quantitative and qualitative deficiencies in nutritional requirements of animals in the West Coast	Kerala
88.	Studies in the livestock economics in the Key Village Blocks ..	Maharashtra
89.	Statistical study of the variations in crop yield of paddy, cotton etc. in relation to weather condition	Madras
90.	Survey study of farm structures in Coimbatore District ..	Madras
91.	Preparation of a book entitled " Wild Roots, Tubers and Fruits " etc.	I.C.A.R.
92.	Publication of monograph entitled " Indian species of the Termite Genus Coptotermes " by M. L. Roonwal and O. B. Chhotani ..	I.C.A.R.
93.	Printing of Supplement—1 to the revised edition of the monograph entitled " Fungi of India "	I.C.A.R.
94.	Reprinting of the first volume of the monograph " Poisonous plants of India "	I.C.A.R.
95.	Publication of books in Hindi and Regional Languages ..	I.C.A.R.
96.	Maximization of paddy yield in India	I.C.A.R.
97.	Setting up of a research farm for research on food crops and fodder crops at high altitude	I.C.A.R.
98.	Seminar on Radio Isotopes etc., January-February 1960 ..	I.C.A.R.
99.	Seminar on Wheat, 1961-62	I.C.A.R.

APPENDIX 1—Concluded.

Sl. No.	Name of Scheme	Sponsoring/Government Authority
100.	Fourth Conference of Horticultural Research Workers, 1961 ..	I.C.A.R.
101.	Fourth All-India Spices and Cashewnut Show, 1961 ..	I.C.A.R.
102.	Review of agronomic practices in the States	I.C.A.R.
103.	Coordination of Agricultural Research in India	I.C.A.R.
104.	Award of prizes to the best successful trainees of the Professional Statisticians Certificate Course of the Institute of Agricultural Research Statistics in the shape of books	I.C.A.R.
105.	Payment of honorarium to authors for the preparation and revision of monographs to be printed at the Government of India Presses	I.C.A.R.

APPENDIX 2

List of current schemes granted extension

Sl. No.	Name of Scheme	Sponsoring/Government Authority
1.	Pulse improvement, Khargone	Madhya Pradesh
2.	Study in agronomic aspects of *jowar*	Shri Shivaji Education Society, Amaravati
3.	Investigation on rice strains resistant to lodging	C.R.R.I.
4.	Improvement of paddy	Madhya Pradesh
5.	Research on rice stem borer	Madras
6.	Research on rice stem borer	West Bengal
7.	Research on rice stem borer, Bapatla	Andhra Pradesh
8.	Research on rice stem borer, Rudrur	Andhra Pradesh
9.	Investigation of false smut, leaf blight and Ephelis disease of paddy	Andhra University
10.	Chemical investigation into the cause of blast resistance in paddy	Madras
11.	Stem rot disease of rice	Madras
12.	Breeding piricularis resistant strains of paddy	Madras
13.	Drought resistant strains of paddy	Kerala
14.	Evolving improved varieties of rice	Kerala
15.	Investigation on drought resistance in wheat	Madhya Pradesh
16.	Interspecific and intergeneric hybridization with Indian wheats ..	Maharashtra Association for the Cultivation of Science, Poona
17.	All-India Fruit Shows and " Udyan Pandit " competitions ..	I.C.A.R.
18.	Description of important varieties of fruits grown in India ..	I.C.A.R.
19.	Pests of citrus and their control	Maharashtra
20.	Improvement of musk-melon and water-melon	I.A.R.I.
21.	Investigations on the diseases of guava	West Bengal
22.	Improvement of *ber* fruit	Rajasthan
23.	Establishment of Central Banana Research Station, Adhuturai ..	Madras
24.	Banana Research	Andhra Pradesh
25.	Banana Research, Ganeshkhind	Maharashtra
26.	Banana research	West Bengal
27.	Study of the effects of different growth regulating substances in horticulture	Andhra Pradesh

APPENDIX 2—Contd.

Sl. No.	Name of Scheme	Sponsoring/Government Authority
28.	Evolution of new varieties of mangoes, citrus and grapes ..	Punjab
29.	Cardamom Research Stations (Two schemes)	Mysore
30.	Composite Research Station for pepper, Cardamom and cashewnut	Assam
31.	Research on pepper	Kerala
32.	Improvement of chillie	Bombay
33.	Morphology and life history of some Indian spices	Delhi University
34.	Studies on the acid soils	Kerala
35.	Reclamation of alkaline and saline soils	Punjab
36.	Distribution of micro-nutrients in the Punjab soils and their effect on the yield of crops	Punjab
37.	Standardization of methods of soil analysis	Field Research Station, Bombay
38.	Photo-chemical nitrogen fixation in soils	Sheila Dhar Institute of Soil Science, University of Allahabad
39.	Reclamation of saline and alkaline soils	—do—
40.	Reclamation of saline and alkaline soils	Madras
41.	Study on the nature and uptake of phosphate by leguminous green manure crops and their availability to paddy	Madras
42.	Studies in the cost of reclamation of Kallar (alkaline) lands ..	Khalsa College, Amritsar
43.	Investigation into micro-nutrient status of soils	Gujarat and Maharashtra
44.	Study of the composition of plants growing on *Usar* lands under reclamation	Lucknow University
45.	Examination of the behaviour of certain additional chemical fertilizers under storage conditions	I.A.R.I.
46.	Investigation on agronomic aspects of green manuring ..	Maharashtra
47.	Investigation into the methods and practices of farming in various States	I.C.A.R.
48.	Production of hybrid maize seed—Central Mechanised Farm, Suratgarh (Rajasthan)	I.C.A.R.
49.	Research on fodder production in Mysore (Manhya Centre) ..	Mysore
50.	Research and improvement of legumes and other fodders ..	Madras
51.	Fodder research, Rajendranagar	Andhra Pradesh
52.	Control of nematodes on betelvine	Maharashtra

APPENDIX 2—Contd.

Sl. No.	Name of Scheme	Sponsoring/Government Authority
53.	Fundamental research on toxicity hazards and mode of action of insecticides	Punjab University
54.	Production, demonstration, trial and popularization of improved agricultural implements	I.A.R.I.
55.	Survey of additional indigenous agricultural implements in the States and I.A.R.I.	I.A.R.I.
56.	Coordination of Animal Husbandry Research	I.C.A.R.
57.	Sheep breeding	Jammu & Kashmir
58.	Sheep breeding	Himachal Pradesh
59.	Sheep breeding	Gujarat (Joria)
60.	Sheep breeding	Bihar
61.	Sheep Research Station	Punjab
62.	Developing mutton breed of sheep	Maharashtra
63.	Sheep breeding	Madras
64.	Angora Goat breeding	Uttar Pradesh
65.	Cheap poultry houses	Orissa
66.	Cheap poultry houses	Uttar Pradesh
67.	Advantages of broiler production in large units	Andhra Pradesh
68.	Raising and distribution of W. L. chicken	Y.M.C.A., Martandam
69.	Control of brucellosis	Uttar Pradesh
70.	Bovine contagious pleuropneumonia	Assam
71.	Nutritional requirements of buffaloes in relation to growth	B. R. College, Agra
72.	Selective breeding and grading up of indigenous cattle (Khariar)	Orissa
73.	Physiological genetics of different breeds of cattle under adverse/ environmental conditions	West Bengal
74.	Crossbreeding of cattle in hilly and rainfall areas—Coordinated scheme	Andhra Pradesh, Assam, Kerala, Madras, Punjab, U.P. and West Bengal
75.	Selective breeding and grading up of indigenous cattle	West Bengal
76.	Intensive cultural practices on small holdings	Calcutta University
77.	Enquiry into factors influencing cropping patterns on individual holdings	Utkal Krushi Mahavidyala

APPENDIX 2—Concluded.

Sl. No.	Name of Scheme	Sponsoring/Government Authority
78.	Statistical analysis of the data in the coordinated scheme for the survey of bacteriological quality of milk supply at Anand, Delhi and Allahabad	I.C.A.R.
79.	Scheme for carrying out a pilot survey to work out the cost of sheep and wool production	Rajasthan
80.	Award of two fellowships, each of the tenure of two years for carrying out advanced research in agricultural and animal husbandry statistics	I.C.A.R.
81.	Enquiry into factors influencing cropping pattern on individual holdings	1. Agricultural College, Ludhiana 2. Directorate of Agriculture, Patna 3. Utkal Krishi Mahavidyalya, Bhubaneshwar 4. B. R. College, Agra 5. Agricultural College, Bapatla
82.	Indian Council of Agricultural Education	I.C.A.R.
83.	Award of fellowships for post-graduate training in agricultural subjects	I.C.A.R.
84.	Award of fellowships for post-graduate training in animal husbandry and dairying subjects	I.C.A.R.
85.	Publication of the "Indian Potato Journal"—Half yearly ..	I.C.A.R.
86.	Supply of agricultural information literature of N.E.S. & C.D. Blocks	I.C.A.R.
87.	Research on deep water paddies-pulla	Andhra Pradesh
88.	Work on rice in saline areas	Andhra Pradesh
89.	Improvement of litchi and mango fruits	Punjab
90.	Medicinal plants	West Bengal
91.	Improvement of vegetable crops, B.A. Farm, Rauni	Punjab
92.	Commercial chick hatchery processing plant	American Arcot Mission, Agricultural Institute, Katpadi
93.	Survey of bacteriological quality of milk supply in Allahabad city	Allahabad Agricultural Institute
94.	Investigation on mastitis	Uttar Pradesh
95.	Investigation on mastitis	I.V.R.I.
96.	Control of coccidiosis in poultry	I.V.R.I.
97.	Investigation on the bearing of Nutrition on Helminthic Infection in Cattle	I.V.R.I.
98.	Kangayam cattle improvement	Madras
99.	Wool utilization	Madras

APPENDIX 3

Additional grants for scheme

Sl. No.	Name of Scheme	Sponsoring/Government Authority
1.	Diseases of banana (change of headquarters)	Madras
2.	Revised estimates of cost of PIRRCOM	I.C.A.R.
3.	Study of effects of improved bullock drawn implements on physical properties of soil and crop performance	B.R. College, Agra
4.	Investigations into the improved methods of transport and short time preservation of fresh water fish	Jadavpur University
5.	Central Artificial Insemination Station	N.D.R.I.
6.	Development of Mutton Breed of Goats	West Bengal

APPENDIX 4

List of schemes terminated

1. Rice Breeding, Punjab
2. Boro Paddy, West Bengal
3. Survey and collection of paddy, C.R.R.I.
4. Blast and foot rot diseases of rice and wheat, Bombay
5. Investigation of foot rot limb breakage, Andhra Pradesh
6. Cashewnut Research, Kerala
7. Investigation of fruit pests, Andhra Pradesh
8. Fruit Research, Kashmir
9. Vegetable Improvement, U.P.
10. Ginger Research, Kerala
11. Turmeric Research, Orissa
12. Ginger, Assam
13. Medicinal plants, Kashmir
14. Green manuring, Bihar
15. Rice Physiology, Calcutta University
16. Plant Physiology and Plant Introduction (combined scheme) Vivekanand Laboratory, Almora
17. Building up named reference collection of insect pests, Baptala
18. Termite Research, I.A.R.I.
19. Ergot production, Assam
20. Pan Diseases, Madhya Pradesh
21. Presoaking seeds in nutrient salts, Vivekanand Laboratory, Almora
22. Improved Agricultural Implements, I.A.R.I.
23. Hybrid *Bajra*, Bombay
24. Possibilities of correlation between physiological and body characteristics of egg production, I.V.R.I.
25. Sterilization of milk, cream, sweetened and flavoured milk at Aarey Milk Colony, Bombay
26. Training in fruit and vegetable preservation in Andhra Pradesh
27. Survey of bacteriological quality of milk produced in Kaira District—Kaira District Cooperative Milk Producers' Union Limited, Anand
28. Survey of bacteriological quality of milk in Delhi—N.D.R.I.
29. Survey of bacteriological quality of milk supply in Allahabad City—Allahabad Agricultural Institute
30. Defining characteristics of breeds of sheep, North Gujarat, Bombay

APPENDIX 4—Concluded.

31. Thickness of skin and distribution of seat glands—I.V.R.I.
32. Cross-breeding of cattle, Bihar
33. Further work on Paddy-straw, I.V.R.I.
34. Urea as protein substitute, I.V.R.I.
35. Economics of poultry ration, Madras
36. V.I.O. Cattle, Saurashtra and Kutch
37. A.D.I.O. Pigs, Punjab
38. Large-scale manufacture of H. S. Adjuvant vaccine, I.V.R.I.
39. Liverfluke infection of livestock in extensive low-lying areas, Bihar
40. Bearing of Nutrition on Helminthic infection, I.V.R.I.
41. Investigation of Mastitis, I.V.R.I.
42. Coccidial Fauna, Bombay
43. Investigation of Mastitis, Uttar Pradesh
44. Mycotic diseases, West Bengal
45. Poultry Coccidiosis, I.V.R.I.
46. Microbial flora associated with fresh water fish, West Bengal
47. Peptone for fish, Andhra Pradesh
48. Animal Husbandry Fellowships, Bombay
49. Animal Husbandry Fellowships, Calcutta

APPENDIX 5

STATEMENT SHOWING THE GRANTS RECEIVED FROM GOVERNMENT OF INDIA

		Rs.
1.	Production of Agricultural films	1,95,000·00
2.	Preparation of propaganda material for Rinderpest Eradication Scheme ..	41,000·00
3.	Pilotinvestigation for collection of statistical data on yield and extent of cardamom cultivation, etc.	43,000·00
4.	Study of milk yield breed and management practices of bovines	78,670·00
5.	Pilot investigation for collection of statistical data on cashewnut cultivation etc.	37,480·00
6.	Scheme for Operational Research and preparation of Project Reports at I.A.R.S.	3,000·00
7.	Pilot survey for study of cultivation practices of pepper and their influence on yield	2,000·00
8.	Establishment of Research-cum-Testing Centres for bullock driven and manually operated agricultural implements	82,470·00
9.	Coordinated Cattle Sterility Scheme	26,410·00
10.	Scheme for ascertaining the cost of Milk Production	94,200·00
11.	Wheat Rust Control Scheme	5,900·00
12.	Scheme for research and development of pepper and cashewnut, etc. ..	83,000·00
13.	Weed Control Scheme	2,000·00
14.	Pilot Scheme for study of feeding and rearing practices of sheep and yield of wool	75,000·00
15.	Study of poultry practices and production	70,250·00
16.	Manurial and Agronomic Trials	46,960·00
	Total ..	8,86,340·00

APPENDIX 6

Statement Showing the Grants received from sources other than the Government of India

Sl. No.	Name of the Organization	Purpose	Rs.
1.	Indian Central Cotton Committee, Bombay	PIRRCOM	4,76,417·84
2.	Indian Central Tobacco Committee, Madras	Sale arrangement of publications	2,000·00
3.	Indian Central Oilseeds Committee, Hyderabad	PIRRCOM	9,30,560·00
4.	I.C.C.C., Bombay	Sale arrangement of publications	2,000·00
5.	Indian Lac Cess Committee, Ranchi	Production of Agricultural films	30,000·00
6.	I.C.O.C., Hyderabad	Scheme for estimating the cost of production and its rotation crops in the major cotton growing tracts in India	1,06,780·00
		Total ..	15,47,757·84
		Or Rs. 15,47,758 (Round)	

APPENDIX 7

MEETINGS OF THE VARIOUS BODIES OF THE INDIAN COUNCIL OF AGRICULTURAL RESEARCH

Sl. No.	Name of the Body	No. of meetings
1.	Agricultural and Animal Husbandry Regional Committees	8
2.	Scientific Committees	42
3.	Rice Committee and its Sub-Committee and Working Parties	14
4.	Other Committees and Sub-Committees	10
5.	Working Party on Agriculture	1
6.	Working Party on Animal Husbandry	1
7.	Board of Research	1
8.	Advisory Board	1
9.	Standing Finance Committee	1
10.	Governing Body	1
11.	Annual General Meeting	1
12.	Special General Meeting	1
13.	Horticultural Development Board	1
	Total ..	83

APPENDIX 8

Conferences, Seminars and Shows held

Sl. No.	Name of the Conference/Show/Seminar	Venue
1.	Conference of Sheep and Wool Development Officers	Jodhpur
2.	Plant Physiology Research Workers' Conference	New Delhi
3.	Ninth Conference on Animal Diseases	Bhubaneswar
4.	Conference of Research Workers on Sheep and Wool	Srinagar
5.	Conference on Agricultural Implements	Kharagpur
6.	Conference of Agricultural and Animal Husbandry Research Workers on Dairying	Bangalore
7.	Seminar on Fruit and Vegetable Preservation	Mysore
8.	All-India Mango Show (Southern Zone)	Madras

APPENDIX 9

List of members of the Indian council of Agricultural Research Society as on 31st March, 1961

1. Shri S. K. Patil,
   Minister of Food and Agriculture,
   Government of India, New Delhi (President).
2. Dr. P. S. Deshmukh,
   Minister of Agriculture,
   Government of India, New Delhi.
3. Shri M. V. Krishnappa,
   Deputy Minister of Agriculture,
   Government of India, New Delhi.
4. Shri V. Shankar,
   Special Secretary to the Government of India, Ministry of Food and Agriculture (Department of Agriculture) and Vice President, Indian Council of Agricultural Research, New Delhi.
5. Shri N. Ramchandra Reddy,
   Minister in Charge of Agriculture,
   Government of Andhra Pradesh,
   Hyderabad-Deccan.
6. Shri Moinul Haque Chaudhury,
   Minister in Charge of Agriculture,
   Pisciculture, Veterinary and Livestock,
   Government of Assam, Shillong.
7. Shri Bir Chand Patel,
   Minister in Charge of Agriculture,
   Government of Bihar, Patna.
8. Shri Hitendra K. Desai,
   Minister in Charge of Agriculture,
   Animal Husbandry and Veterinary,
   Government of Gujarat, Ahmedabad.
9. Shri E. P. Poulose,
   Minister in Charge of Agriculture,
   Animal Husbandry and Veterinary,
   Government of Kerala, Trivandrum.
10. Dr. K. N. Katju,
    Chief Minister in Charge of Agriculture,
    Animal Husbandry and Veterinary,
    Government of Madhya Pradesh, Bhopal.
11. Shri M. Bhaktavatsalam,
    Minister in Charge of Agriculture,
    Animal Husbandry and Veterinary,
    Government of Madras, Fort St. George,
    Madras.
12. Shri P. K. Savant,
    Minister in Charge of Agriculture,
    Animal Husbandry and Veterinary,
    Government of Maharashtra, Bombay.
13. Shri N. Rachiah,
    Minister in Charge of Agriculture,
    Animal Husbandry and Veterinary,
    Government of Mysore, Bangalore.
14. Shri Gian Singh Rarewala,
    Minister in Charge of Agriculture,
    Animal Husbandry, Government of Punjab,
    Chandigarh.
15. Shri Nathu Ram Mirdha,
    Minister in Charge of Agriculture and
    Animal Husbandry, Rajasthan, Jaipur.
16. Shri Charan Singh,
    Minister in Charge of Agriculture,
    Animal Husbandry and Veterinary, Government of Uttar Pradesh, Lucknow.
17. Shri Tarun Kanti Ghosh,
    Minister in Charge of Agriculture,
    Government of West Bengal, Calcutta.
18. Shri Asad-Ullah,
    Minister in Charge of Agriculture,
    Animal Husbandry and Veterinary,
    Government of Jammu and Kashmir,
    Srinagar/Jammu Tawi.
19. Shri D. Sanjivayya,
    Chief Minister in Charge of Animal Husbandry, Government of Andhra Pradesh,
    Hyderabad.
20. Shri Ram Prakash Lal,
    Minister in Charge of Animal Husbandry and Veterinary, Government of Bihar,
    Patna.
21. Dr. R. Ahmed,
    Minister in Charge of Animal Husbandry,
    Government of West Bengal,
    Writers' Building, Calcutta-1.
22. Shri Bhagwan Sahay,
    Chief Commissioner of Delhi,
    No. 6, Ludlow Castle Road, Delhi.
23. Raja Bajrang Bahadur Singh, of Bhadri,
    Lt. Governor of Himachal Pradesh, Simla-4.
24. Shri J. M. Raina,
    Chief Commissioner of Manipur, Imphal.
25. Shri N. M. Patnaik,
    Chief Commissioner of Tripur, Agartala.
26. Shri M. V. Rajwade,
    Chief Commissioner of Andaman, Port Blair.
27. Shri C. K. Balakrishnan Nair,
    Administrator, Laccadive, Minicoy and Amindivi Islands, Kozhikode-4.
28. Shri D. Viswanatha Reddy,
    Director of Agriculture,
    Andhra Pradesh, Hyderabad-Deccan.
29. Dr. S. R. Barooah,
    Director of Agriculture, Assam, Shillong.

*Papers are also to be supplied to Shri Shyam Sunder Narain Mushran, Deputy Minister of Agriculture, Government of Madhya Pradesh, Bhopal.

APPENDIX 9—Contd.

30. Shri B. P. Akhaury,
Director of Agriculture,
Bihar, Patna.

31. Dr. M. D. Patel,
Director of Agriculture,
Gujarat, Ahmedabad.

32. Shri P. M. Mathew,
Director of Agriculture,
Kerala, Trivandrum.

33. Shri Mohd. Akbar,
Director of Agriculture,
Madhya Pradesh, Rewa.

34. Shri A. Venkataran,
Director of Agriculture,
Madras, P.B. No. 412,
Triplicane, Madras-5.

35. Dr. M. B. Ghatge,
Director of Agriculture,
Maharashtra, Poona.

36. Shri M. Mallaraj Urs,
Director of Agriculture,
Mysore, Bangalore-1.

37. Shri A. L. Nair,
Director of Agriculture and Food Production,
Orissa, Cuttack.

38. Shri Pritam Singh,
Director of Agriculture,
Punjab, Chandigarh.

39. Shri Samrath Raj,
Director of Agriculture,
Rajasthan, Jaipur.

40. Dr. B. K. Mukherjee,
Director of Agriculture,
Uttar Pradesh, Lucknow.

41. Dr. H. K. Nandi,
Director of Agriculture,
West Bengal,
Writers' Building, Calcutta.

42. Shri G. M. Butt,
Director of Agriculture,
Jammu and Kashmir,
Srinagar/Jammu Tawi.

43. Dr. P. M. N. Naidu,
Director of Animal Husbandry and Fisheries,
Andhra Pradesh, Hyderabad-Deccan.

44. Shri H. K. Mehra,
Director of Veterinary Services and Animal Husbandry,
Assam, Gauhati.

45. Shri S. K. Sen,
Director of Animal Husbandry,
Bihar, Patna.

46. Shri K. P. R. Kartha,
Director of Animal Husbandry,
Kerala State, P. B. No. 57,
Trivandrum-1.

47. Shri G. C. Juneja,
Director of Veterinary Services and Animal Husbandry, Madhya Pradesh, Bhopal.

48. Dr. D. Pattabhiraman,
Director of Animal Husbandry,
15, Marshall's Road, Madras-8.

49. Shri G. A. Sharma,
Director of Animal Husbandry,
Maharashtra, Poona.

50. Dr. K. S. Shetty,
Director of Animal Husbandry and Veterinary Services,
Mysore, Bangalore.

51. Shri G. Biswal,
Director of Animal Husbandry and Veterinary Services,
Orissa, Cuttack.

52. Sardar Pritam Singh Brar,
Director of Veterinary Services and Warden of Fisheries,
Punjab, Chandigarh.

53. Shri G. S. Rathore,
Director of Animal Husbandry,
Rajasthan, Jaipur.

54. Shri M. R. Mahajan,
Director of Animal Husbandry,
Uttar Pradesh, Lucknow.

55. Shri J. M. Lahiri,
Director of Veterinary Services,
West Bengal, New Secretariat Building,
Calcutta.

56. Shri Ghulam Mohy-ud-Din,
Director of Veterinary Services,
Jammu and Kashmir, Srinagar/Jammu Tawi.

57. Shri K. R. Damle,
Secretary to the Government of India,
Ministry of Food and Agriculture,
(Department of Agriculture), New Delhi.

58. Shri Dahyabhai Vallabhbhai Patel,
Member, Rajya Sabha,
68, Marine Drive, Bombay;
28, Jor Bagh Nursery, New Delhi.

59. Shri S. Channa Reddy,
Member, Rajya Sabha,
3-4-872/1, Barkat Pura, (Opposite Andhra Yuvati Mandali), Hyderabad-Deccan;
74, North Avenue, New Delhi.

60. Shri T. Sanganna,
Member, Lok Sabha,
Rayaguda, P.O. Rayaguda, District Koraput, Orissa;
149, North Avenue, New Delhi.

61. Shri M. Shankaraiya,
Advocate, Member, Lok Sabha,
111, Main Road, Vani Vilas Mohalla,
Mysore City;
14-D, Ferozeshah Road, New Delhi.

APPENDIX 9—Contd.

62. Sardar Iqbal Singh,
Member, Lok Sabha, House No. 662,
Ward No. 6, Abohar, Punjab;
15-A, South Avenue, New Delhi.

63. Shri P. R. Patel,
Member, Lok Sabha,
Pilaji Ganj, Mehsana, Gujarat State;
15-A, South Avenue, New Delhi-2.

64. Shri G. V. Swaika,
Swaika Oil Mills, 18-B, Breborne Road,
Calcutta-1.

65. Shri A. R. Foster,
Managing Director,
Imperial Chemical Industries (India)
Private Ltd.,
Hamilton House, New Delhi.

66. Dr. J. S. Patel,
Agricultural Commissioner with the Government of India, New Delhi.

67. Shri L. Sahai,
Animal Husbandry Commissioner with the Government of India,
New Delhi.

68. Dr. S. M. Sikka,
Additional Agricultural Commissioner with the Government of India, New Delhi.

69. Shri N. P. Chatterjee,
Agricultural Marketing Adviser to the Government of India,
Nagpur.

70. Dr. B. P. Pal,
Director, Indian Agricultural Research Institute, New Delhi.

71. Shri P. G. Pande,
Director, Indian Veterinary Research Institute, Izatnagar (U.P.).

72. Dr. S. Bhagavantam,
Director, Indian Institute of Science,
Bangalore.

73. Dr. R. H. Richharia,
Director, Central Rice Research Institute,
Cuttack.

74. Dr. Pushkarnath,
Director, Central Potato Research Institute,
Simla.

75. Shri K. P. Sagreiya,
President, Forest Research Institute and Colleges,
New Forest P.O., Dehra Dun.

76. Dr. R. M. Patel,
Director, Institute of Agriculture,
Anand.

77. Dr. K. K. Iya,
Director, National Dairy Research Institute,
Karnal.

78. Shri Thakur Das Bhargava,
Advocate, Member, Lok Sabha,
Anand Bhavan, Hissar.

79. Shri T. S. Krishnamurti,
Secretary, Central Board of Forestry,
(Ministry of Food and Agriculture), Department of Agriculture, New Delhi.

80. Prof. M. S. Thacker,
Director General, Council of Scientific and Industrial Research, New Delhi.

81. Smt. Lilavati Munshi,
President, All India Women's Central Food Council,
Bhartiya Vidya Bhavan,
Chowpatty Road, Bombay-7.

82. Shri V. S. Rao, I.F.S.,
Inspector General of Forests,
Ministry of Food and Agriculture,
New Delhi.

83. Shri Tribhovandas K. Patel,
Chairman, Kaira District Cooperative Milk Producers' Union Ltd., Anand.

84. Dr. C. G. Pandit,
Director, Indian Council of Medical Research,
Medical Enclave, P.B. No. 494, New Delhi.

85. Dr. A. C. Joshi,
Vice-Chancellor,
Punjab University, Chandigarh.

86. Shri B. J. Patel,
Vice-Chancellor,
Sardar Vallabhbhai Vidyapeeth,
Vallabha Vidyanagar, Gujarat State.

87. Dr. P. Parija,
Vice-Chancellor,
Utkal University, Cuttack-1.

88. Dr. Shri Ranjan,
Vice-Chancellor,
Allahabad University, Allahabad.

89. Shri W. Wilson Mayne,
General Manager, Kanan Deven Hills Produce Company Limited,
P.O. Mannar, Kerala State.

90. Shri U. K. Lakshman Gowda, B.Sc.,
Urvinkhan Estate, P.O. Javali,
Chikamagalur Distt. Mysore.

91. Shri A. K. Rajapadmanabhan,
Deputy Rubber Production Commissioner,
Rubber Board, Kottayam, Kerala.

92. Dr. B. L. Sethi,
Secretary, Indian Central Cotton Committee,
14, Nicol Road, Bellard Estate, Bombay-1.

93. Shri S. G. Mukerjee,
4-A, Bow Bazar Orphanage Lane,
P.O. Bow Bazar, Calcutta.

94. Dr. T. S. Venkataraman,
56, Thayagaraja Road, Thayagarajanagar,
Madras-17.

95. Shri P. Balarama Kurup,
P.O. Box No. 79, Kozhikode, Calicut.

APPENDIX 9—Contd.

96. Shri Mohanlal Ambalal Parikh,
C/o M/s Mohanlal Hargovindas & Co.,
51, Dady Seth Agiary Lane, Bombay-2.

97. Shri G. U. Rao,
54, Kandappa, Chetty Street, Madras-1;
I.C.S. Road, Gudur P.O., Andhra Pradesh.

98. Shri A. Bhima Bhat,
Advocate, Puttur, South Kanara,
Mangalore.

99. Shri Madanmohan R. Ruia,
Vice-President, I.C.C.C.,
C/o M/s Ramnarain & Sons Private Ltd.,
State Building Annexe, Park Street,
Fort, Bombay-1.

100. Shri B. P. Kedia,
Vice-President, Indian Central Jute
Committee, C/o M/s Anderson Wright Ltd.,
7-Wellesley Place, Calcutta-1.

101. Sardar Lal Singh,
Village and P.O. Nandpur,
District Ludhiana, Punjab.

102. Shri K. P. Madhavan Nair,
Member, Rajya Sabha,
Vice-President, Indian Central Coconut
Committee,
Ernakulam Mills, Ernakulam;
26, Dr. Rajendra Prasad Road, New Delhi.

103. Shri T. Venkatappaiah,
Advocate, Vice-President,
Indian Central Tobacco Committee,
Station Road, P.O. Kothagudium,
Khaiman Distt., Andhra Pradesh.

104. Shri Ratilal M. Gandhi,
Vice-President,
Indian Central Oilseeds Committee,
Landlord and Director, Rayalseema Mills,
Adoni.

105. Shri C. M. John,
Vice-President,
Indian Central Arecanut Committee,
Cherukkara Farm, Changanacherry,
Kottayam District, Kerala State.

106. Dr. R. N. Poduval,
Economic & Statistical Adviser,
Department of Agriculture,
Government of India, New Delhi.

107. Dr. G. R. Seth,
Statistical Adviser, I.C.A.R.,
Library Avenue, New Delhi.-12

108. Dr. N. K. Panikkar,
Fisheries Development Adviser to the
Government of India, Ministry of Food and
Agriculture, (Department of Agriculture),
New Delhi.

109. Shri A. C. Bose,
Joint Secretary to the Government of India,
Ministry of Finance (Department of Expen-
diture) and Financial Adviser, I.C.A.R.,
New Delhi.

110. Shri Kartar Singh Dewana,
M.L.A., Dewana Farm,
Amargarh (District Sangrur), Punjab.

111. Shri V. C., Palaniswami Gounder,
Vellappinar P.O. Coimbatore.

112. Col. G. S. Dhillon,
Dhillon's Farm, Shivepuri,
Madhya Pradesh.

113. Shri N. V. Kak,
Vasundhara, Jaipur.

114. Sardar Satwant Singh,
Nasirpur Farm, P.O. Bahadurgarh Fort,
Patiala.

115. Shri M. P. Gandhi,
C/o M. P. Gandhi & Co.,
Nanabhoy Mansion,
Sir Pheroze Shah Mehta Road, Fort,
Bombay.

116. Shri P. R. Kanavade Patil,
Advocate, Rangargali, Ahmednagar,
Maharashtra.

117. Shri B. Prasad,
Dewan of Sikkim, Gangtok.

118. Dr. K. L. Narasimham,
Director of Agriculture and Animal
Husbandry, Sikkim, Gangtok.

APPENDIX 10

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

List of the members of the Governing Body as on 31-3-1961

1. Shri S. K. Patil,
   Minister of Food and Agriculture,
   Government of India, New Delhi (President).
2. Dr. P. S. Deshmukh,
   Minister of Agriculture,
   Government of India, New Delhi.
3. Shri M. V. Krishnappa,
   Deputy Minister of Agriculture,
   Government of India, New Delhi.
4. Shri V. Shankar,
   Special Secretary to the Government of India, Ministry of Food and Agriculture, (Department of Agriculture) and Vice-President, I.C.A.R., New Delhi.
5. Shri N. Ramachandra Reddy,
   Minister in Charge of Agriculture,
   Government of Andhra Pradesh,
   Hyderabad-Deccan.
6. Shri Moinul Haque Chaudhury,
   Minister in Charge of Agriculture, Veterinary and Livestock,
   Government of Assam, Shillong.
7. Shri Bir Chand Patel,
   Minister in Charge of Agriculture,
   Government of Bihar, Patna.
8. Shri Hitendra K. Desai,
   Minister in Charge of Agriculture, Animal Husbandry and Veterinary,
   Government of Gujarat, Ahmedabad.
9. Shri E. P. Poulose,
   Minister in Charge of Agriculture, Animal Husbandry and Veterinary,
   Government of Kerala, Trivandrum.
10. Dr. K. N. Katju,
    Chief Minister in Charge of Agriculture, Animal Husbandry and Veterinary,
    Government of Madhya Pradesh, Bhopal.
11. Shri M. Bhaktavatsalam,
    Minister in Charge of Agriculture, Animal Husbandry and Veterinary,
    Government of Madras, Fort St. George, Madras.
12. Shri P. K. Savant,
    Minister in Charge of Agriculture, Animal Husbandry and Veterinary,
    Government of Maharashtra, Sachivalaya, Bombay.
13. Shri N. Rachiah,
    Minister in Charge of Agriculture, Animal Husbandry and Veterinary,
    Government of Mysore, Bangalore.
14. Shri Gian Singh Rarewala,
    Minister in Charge of Agriculture and Animal Husbandry,
    Government of Punjab, Chandigarh.
15. Shri Nathu Ram Mirdha,
    Minister in Charge of Agriculture and Animal Husbandry,
    Government of Rajasthan, Jaipur.
16. Shri Charan Singh,
    Minister in Charge of Agriculture, Animal Husbandry and Veterinary,
    Government of U.P., Lucknow.
17. Shri Tarun Kanti Ghosh,
    Minister in Charge of Agriculture,
    Government of West Bengal, Calcutta.
18. Shri Asad-Ullah,
    Minister in Charge of Agriculture, Animal Husbandry and Veterinary,
    Government of Jammu and Kashmir, Srinagar/Jammu Tawi.
19. Shri D. Sanjivayya,
    Chief Minister in Charge of Animal Husbandry,
    Government of Andhra Pradesh, Hyderabad.
20. Shri Ram Prakash Lal,
    Minister in Charge of Animal Husbandry and Veterinary,
    Government of Bihar, Patna.
21. Dr. R. Ahmed,
    Minister in Charge of Animal Husbandry,
    Government of West Bengal,
    Writers' Buildings, Calcutta-1.
22. Shri K. R. Damle,
    Secretary to the Government of India, Ministry of Food and Agriculture, (Department of Agriculture), New Delhi.
23. Shri Bhagwan Sahay,
    Chief Commissioner of Delhi,
    No. 6, Ludlow Castle Road, Delhi.
24. Raja Bajrang Bahadur Singh of Bhadri,
    Lt. Governor, Himachal Pradesh,
    Simla-4.
25. Shri J. M. Raina,
    Chief Commissioner of Manipur,
    Imphal.
26. Shri Mahadev Vinayak Rajwadi,
    Chief Commissioner of Andaman and Nicobar Islands, Port Blair.
27. Shri N. M. Patnaik,
    Chief Commissioner of Tripura, Agartala.
28. Shri C. K. Balakrishnan Nair,
    Administrator, Laccadive, Minicoy and Amindivi Islands, Kozhikode-4.
29. Shri S. Channa Reddy,
    Member, Rajya Sabha, 3/4872/1, Barkatpura, (Opposite Andhra Yuvati Mandli), Hyderabad-Deccan;
    74, North Avenue, New Delhi.

APPENDIX 10—Contd.

30. Shri T. Sanganna,
Member, Lok Sabha,
Rayaguda, P.O. Rayaguda,
District Koraput, Orissa;
149, North Avenue, New Delhi.

31. Shri M. Sankaraiya,
Advocate, Member, Lok Sabha,
111, Main Road, Vani Vilas Mohalla,
Mysore City;
14-D, Ferozeshah Road, New Delhi.

32. Shri H. Siddaveerappa,
Vokkaligara Sangha Buildings,
Sri Krishnarajendra Road, Bangalore-4.

33. Shri S. K. Sen,
Director of Animal Husbandry
Bihar, Patna.

34. Shri A. C. Bose,
Joint Secretary to the Government of India,
Ministry of Finance (Department of
Expenditure), and Financial Adviser,
I.C.A.R., New Delhi.

35. Shri Thakur Das Bhargava,
Advocate, Member, Lok Sabha,
Anand Bhavan, Hissar;
31, Canning Lane, New Delhi.

36. Shri M. P. Gandhi,
C/o Gandhi & Co.,
Nanabhoy Mansion,
Sir Pherozeshah Mehta Road, Fort,
Bombay.

37. Sardar Satwant Singh,
Nasirpur Farm, P.O. Bahadurgarh Fort,
Patiala.

38. Shri P. R. Kanawade Patil,
Advocate, Rangar Galli,
Ahmednagar, Maharashtra.

39. Shri B. Prasad,
Dewan of Sikkim, Gangtok.

APPENDIX 11

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

List of Members of the Standing Finance Committee as on 31-3-1961

1. Shri K. R. Damle,
   Secretary, Ministry of Food and Agriculture, (Department of Agriculture), Government of India, New Delhi.
2. Shri V. Shankar,
   Special Secretary to the Government of India, Ministry of Food and Agriculture, (Department of Agriculture), and Vice-President, I.C.A.R., New Delhi.
3. Shri A. C. Bose,
   Joint Secretary to the Government of India, Ministry of Finance, (Department of Expenditure) and Financial Adviser, I.C.A.R., New Delhi.
4. Shri N. Ramachandra Reddy,
   Minister in Charge of Agriculture, Government of Andhra Pradesh, Hyderabad.
5. Shri Nathu Ram Mirdha,
   Minister in Charge of Agriculture, Animal Husbandry and Veterinary, Government of Rajasthan, Jaipur.
6. Shri T. Sanganna,
   Member, Lok Sabha, Rayaguda, P.O. Rayaguda, District Koraput, Orissa;
   149, North Avenue, New Delhi.
7. Shri Satwant Singh,
   Nasirpur Farm, Bahadurgarh Fort, Patiala.
8. Shri S. W. Mensinkai,
   Principal, College of Agriculture, Dharwar, Mysore State.
9. Shri Bertile A. D'Souza,
   Principal, Madras Veterinary College, Madras.

APPENDIX 12

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

List of members of the Advisory Board as on 31-3-1961

1. Shri V. Shankar,
   Special Secretary to the Government of India, Ministry of Food and Agriculture, (Department of Agriculture) and Vice-President, Indian Council of Agricultural Research, New Delhi.
2. Dr. J. S. Patel,
   Agricultural Commissioner with the Government of India, New Delhi.
3. Shri L. Sahai,
   Animal Husbandry Commissioner with the Government of India, New Delhi.
4. Dr. S. M. Sikka,
   Additional Agricultural Commissioner with the Government of India, New Delhi.
5. The Extension Commissioner,
   Ministry of Food and Agriculture, (Department of Agriculture), Government of India, New Delhi.
6. Shri N. P. Chatterjee,
   Agricultural Marketing Adviser to the Government of India, Nagpur.
7. Dr. R. N. Poduval,
   Economic and Statistical Adviser, Ministry of Food and Agriculture, (Department of Agriculture), Government of India, New Delhi.
8. Dr. G. R. Seth,
   Statistical Adviser, Indian Council of Agricultural Research, Library Avenue, New Delhi.
9. Dr. B. P. Pal,
   Director, Indian Agricultural Research Institute, New Delhi.
10. Shri P. G. Pande,
    Director, Indian Veterinary Research Institute, Izatnagar.
11. Dr. S. Bhagavantam,
    Director, Indian Institute of Science, Bangalore.
12. Dr. K. K. Iya,
    Director, National Dairy Research Institute, Karnal.
13. Dr. R. H. Richharia,
    Director, Central Rice Research Institute, Cuttack.
14. Dr. Pushkar Nath,
    Director, Central Potato Research Institute, Simla.
15. Shri D. Vishwanatha Reddy,
    Director of Agriculture, Andhra Pradesh, Hyderabad-Deccan.
16. Dr. S. R. Barooah,
    Director of Agriculture, Assam, Shillong.
17. Shri B. P. Akhaury,
    Director of Agriculture, Bihar, Patna.
18. Dr. M. D. Patel,
    Director of Agriculture and Animal Husbandry, Gujarat.
19. Shri P. M. Mathew,
    Director of Agriculture, Kerala, Trivandrum.
20. Shri Mohd. Akbar,
    Director of Agriculture, Madhya Pradesh, Rewa.
21. Shri A. Venkatesan,
    Director of Agriculture, Madras, P.B. No. 412, Triplicane, Madras-5.
22. Dr. M. B. Ghatge,
    Director of Agriculture, Maharashtra, Poona.
23. Shri M. Mallaraj Urs,
    Director of Agriculture, Mysore, Bangalore-1.
24. Shri A. L. Nair,
    Director of Agriculture, Orissa, Cuttack.
25. Shri Pritam Singh Diol,
    Director of Agriculture, Punjab, Chandigarh.
26. Shri Samrath Raj,
    Director of Agriculture, Rajasthan, Jaipur.
27. Dr. B. K. Mukherjee,
    Director of Agriculture, Uttar Pradesh, Lucknow.
28. Dr. H. K. Nandi,
    Director of Agriculture, West Bengal, Writers' Building, Calcutta.
29. Shri G. M. Butt,
    Director of Agriculture, Jammu and Kashmir, Srinagar/Jammu Tawi.
30. Dr. P. M. N. Naidu,
    Director of Animal Husbandry and Fisheries, Andhra Pradesh, Hyderabad-Deccan.
31. Shri H. K. Mehra,
    Director of Veterinary Department, Assam, Gauhati.

APPENDIX 12—Contd.

32. Shri S. K. Sen,
Director of Animal Husbandry,
Bihar, Patna.

33. Shri K. P. R. Kartha,
Director of Animal Husbandry,
Kerala, P.B. No. 57, Trivandrum-1.

34. Shri G. C. Juneja,
Director of Veterinary and
Animal Husbandry Services,
Madhya Pradesh, Rewa.

35. Dr. D. Pattabhiraman,
Director of Animal Husbandry,
Madras, Egmore.

36. Shri G. A. Sharma,
Director of Animal Husbandry,
Maharashtra, Poona.

37. Dr. K. S. Shetty,
Director of Animal Husbandry and
Veterinary Services,
Mysore, Bangalore.

38. Shri G. Biswal,
Director of Animal Husbandry and
Veterinary Services,
Orissa, Cuttack.

39. Shri P. S. Brar,
Director of Animal Husbandry and
Warden of Fisheries,
Punjab, Chandigarh.

40. Shri G. S. Rathore,
Director of Animal Husbandry,
Rajasthan, Jaipur.

41. Shri M. R. Mahajan,
Director of Animal Husbandry,
Uttar Pradesh, Lucknow.

42. Shri J. M. Lahiri,
Director of Veterinary Services,
West Bengal, Calcutta.

43. Shri Ghulam Mohy-ud-Din,
Director of Veterinary Services,
Jammu and Kashmir, Srinagar.

44. Shri K. P. Sagreiya,
President, Forest Research Institute
and Colleges,
P.O. New Forest, Dehra-Dun.

45. Shri Tribhavandas K. Patel,
Chairman, Kaira District Cooperative
Milk Producers' Union, Ltd., Anand.

46. Dr. C. G. Pandit,
Director, Indian Council of Medical
Research, Medical Enclave,
New Delhi.

47. Dr. A. C. Joshi,
Vice-Chancellor, Punjab University,
Chandigarh.

48. Shri Balubhai J. Patel.
Vice-Chancellor,
Sardar Vallabhbhai Vidyapeeth, Vallabh
Vidyanagar, Gujarat.

49. Dr. P. Parija,
Vice-Chancellor,
Utkal University, Cuttack-1.

50. Dr. Shri Ranjan,
Vice-Chancellor, Allahabad University,
Allahabad.

51. Shri W. Wilson Mayne,
General Manager,
Kanan Devan Hills Produce Co. Ltd.,
Mannar P.O., Kerala.

52. Dr. B. L. Sethi,
Secretary, Indian Central Cotton Committee,
14, Nicol Road, Ballard Estate,
Bombay-1.

53. Shri S. C. Mukherjee,
4-A, Bowbazar, Orphanage Lane,
P.O. Bowbazar, Calcutta.

54. Dr. T. S. Venkataraman,
56, Thayagaraja Road,
Thayagaraja Nagar, Madras-17.

55. Shri P. Balarama Kurup,
P.O. Box No. 79, Kozhikode,
Calicut.

56. Shri Mohanlal Ambalal Parikh,
C/o M/s. Mohanlal Hargovindas, Agiary
Lane, Bombay-2.

57. Shri G. U. Rao,
54, Kandappa Chetty Street,
Madras-1.

58. Shri U. K. Lakshman Gowda,
Urvinkhan Estate, P.O. Javali
Chikamagalua District,
Mysore.

59. Shri A. K. Rajapadmanabhan,
Deputy Rubber Production Commissioner,
Rubber Board, Kottayam, Kerala.

60. Dr. N. K. Panikkar,
Fisheries Development Adviser to the
Government of India,
Department of Agriculture, New Delhi.

61. Shri R. R. Panje,
Director, Indian Institute of Sugarcane
Research, Rai Bareilly Road,
Dilkush, Lucknow.

62. Shri N. R. Bhatt,
Director, Sugarcane Breeding Institute,
Coimbatore-7.

63. Shri B. M. Lakshmipathy,
No. 3, Kariappa Mudalli Street,
Purasa Walkam, Vepery, Madras-7.

64. Dr. S. Krishnamurthy,
Additional Director of Agriculture and
Dean of Agriculture,
Agricultural Research Institute and College,
Coimbatore.

65. Dr. B. Mukherji,
Director, Central Drug Research Institute,
Chattar Manzil Palace, Lucknow.

APPENDIX 12—Concluded

66. Dr. T. S. Sadasivan,
Director, Botany Laboratory, University Buildings, Chepauk, Madras-5.

67. Dr. J. A. Daji,
384, Bhawani Peth,
Madan Colony, Poona-2.

68. Dr. M. L. Roonwal,
Director, Zoological Survey of India,
34, Chittaranjan Avenue, Calcutta-1.

69. Dr. T. J. Mirchandani,
Director, Agronomic Survey and Experimentation, Indian Council of Agricultural Research, New Delhi.

70. Dr. V. R. Khanolkar,
Director, Indian Cancer Research Centre,
Parel, Bombay-12.

71. Dr. D. N. Khurody,
Dairy Development Commissioner and Joint Secretary to the Government of Maharashtra, Agriculture and Forests Department (Dairy Development Division), Old Secretariat Building, Fort, Bombay-1.

72. Shri S. S. Khot,
Liaison Officer (Sheep & Wool),
Indian Council of Agricultural Research,
New Delhi.

73. Shri S. G. Iyer,
Poultry Specialist, Directorate of Extension,
Ministry of Food and Agriculture
(Department of Agriculture),
Government of India, New Delhi.

74. Dr. H. D. Srivastava,
Head of the Division of Parasitology,
Indian Veterinary Research Institute,
Izatnagar.

75. Dr. N. D. Kehar,
Head of the Department of Animal Sciences,
U.P. Agricultural University,
Pantnagar, Nainital.

76. Dr. P. S. Lokanathan,
Director General, National Council of Applied Economic Research,
Parisila Bhavan, 11, Indraprastha Estate,
New Delhi.

77. Dr. K. T. Jacob,
Director, Jute Agricultural Research Institute, Barrackpore, Calcutta.

78. Dr. M. S. Muthana,
Director, Indian Lac Research Institute,
Namkum, Ranchi.

79. Dr. R. Nagan Gowda,
M.L.A., Mysore State, Bangalore.

80. Dr. K. P. V. Menon,
Director, Central Coconut Research Station,
Kayangulam, Ochira P.O. Kerala.

81. Dr. G. S. Murty,
Director, Tobacco Research, Central Tobacco Research Institute,
Rajahmundry.

82. Dr. R. Sankaran,
Secretary, Indian Central Oilseeds Committee, Hyderabad-1 (Andhra Pradesh).

83. Shri K. V. Ahmed Bavappa,
Agronomist, Incharge, Central Arecanut Research Station, Vittal, South Kanara District, Mysore.

84. Dr. Arjan Singh,
Adviser (Agriculture), Ministry of Community Development and Cooperation (Department of Community Development), Government of India, New Delhi.

85. Dr. M. D. R. Iyengar,
Deputy Director (Fisheries), Ministry of Community Development and Cooperation (Department of Community Development), Government of India, New Delhi.

86. Shri G. R. Valunjkar,
Director, (Leather Industry),
Khadi Industries Commission,
Express Building,
Opposite Churchgate, Bombay.

87. Dr. B. D. Laroia,
Development Officer (Science), University Grants Commission, C.S.I.R. Building,
Rafi Marg, New Delhi.

88. Shri Bishan Man Singh,
Civil Lines, Fatehpur, U.P.

89. Shri Ujjal Singh,
12 Curzon Road, New Delhi.

90. Shri H. Siddaveerappa,
1083, 2nd Road, P.J. Extension,
Devanagare, Mysore State.

91. Dr. P. Bhattacharya,
Livestock Development Adviser,
Ministry of Food and Agriculture
(Department of Agriculture),
New Delhi.

92. Shri Nand Kishore Narayan,
President, Bihar Cane Growers' Federation, Doomer Narendra, P.O. Bhore,
District Saran, Bihar.

93. Shri Jagjit Singh Mann,
Secretary, Punjab Krishak Samaj,
137, Lal Bagh, Patiala.

94. Dr. K. L. Narasimhan,
Director of Agriculture and
Animal Husbandry, Sikkim, Gangtok.

APPENDIX 13

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

List of members of the Board of Research as on 31-3-1961

1. Shri V. Shankar,
   Special Secretary, Ministry of Food and Agriculture (Department of Agriculture), and Vice-President, Indian Council of Agricultural Research, New Delhi.
2. Dr. J. S. Patel,
   Agricultural Commissioner with the Government of India, New Delhi.
3. Shri L. Sahai,
   Animal Husbandry Commissioner with the Government of India, New Delhi.
4. Dr. S. M. Sikka,
   Additional Agricultural Commissioner with the Government of India, New Delhi.
5. The Extension Commissioner,
   Ministry of Food and Agriculture (Department of Agriculture), Government of India, New Delhi.
6. Dr. G. R. Seth,
   Statistical Adviser, Indian Council of Agricultural Research, New Delhi.
7. Dr. B. P. Pal,
   Director, Indian Agricultural Research Institute, New Delhi.
8. Shri P. G. Pande,
   Director, Indian Veterinary Research Institute, Izatnagar (U.P.).
9. Dr. K. K. Iya,
   Director, National Dairy Research Institute, Karnal.
10. Dr. R. H. Richharia,
    Director, Central Rice Research Institute, Cuttack.
11. Dr. Pushkar Nath,
    Director, Central Potato Research Institute, Simla.
12. Shri R. R. Panje,
    Director, Indian Institute of Sugarcane Research, Rai Bareilly Road, Dilkush, Lucknow.
13. Dr. N. R. Bhatt,
    Director, Sugarcane Breeding Institute, Coimbatore-7.
14. Shri K. P. Segreiya,
    President, Forest Research Institute and Colleges, P.O. New Forest, Dehra Dun.
15. Dr. V. R. Khanolkar,
    Director, Indian Cancer Research Centre, Parel, Bombay-12.
16. Dr. T. S. Sadasivan,
    Director, Botany Laboratory, University Buildings, Chepauk, Madras-5.
17. Dr. M. L. Roonwal,
    Director, Zoological Survey of India, 34, Chittaranjan Avenue, Calcutta-1.
18. Dr. B. Mukerji,
    Director, Drug Research Institute, Chattar Manzil Palace, Lucknow.
19. Dr. S. Krishnamurthi,
    Dean and Additional Director of Agriculture, Agricultural College and Research Institute, Coimbatore-3.
20. Dr. B. M. Lakshmipathy,
    No. 3, Kariappa Mudali Street, Purasa Walkam, Vepery, Madras-7.
21. Dr. T. J. Mirchandani,
    Director, Agronomic Survey and Experimentation, Indian Council of Agricultural Research, New Delhi.
22. Dr. J. A. Daji,
    384, Bhawani Peth, Madan Colony, Poona-2.
23. Shri D. N. Khurody,
    Dairy Development Commissioner and Joint Secretary to the Government of Maharashtra, Agriculture and Forests Department, (Dairy Development Division), Old Secretariat Buildings, Fort, Bombay-1.
24. Shri S. S. Khot,
    Liaison Officer (Sheep and Wool), Indian Council of Agricultural Research, New Delhi.
25. Shr. S. G. Iyer,
    Poultry Specialist, Directorate of Extension, Ministry of Food and Agriculture (Department of Agriculture), Government of India, New Delhi.
26. Dr. H. D. Srivastava,
    Head of the Division of Parasitology, Indian Veterinary Research Institute, Izatnagar.
27. Dr. N. D. Kehar,
    Head of the Department of Animal Sciences, U.P. Agricultural University, Pantnagar, District Nainital.
28. Dr. N. K. Panikkar,
    Fisheries Development Adviser to the Government of India, Ministry of Food and Agriculture (Department of Agriculture), New Delhi.
29. Dr. P. S. Lokanathan,
    Director, General, National Council of Applied Economics Research, Parisila Bhavan, 11, Indraprastha Estate, New Delhi.

APPENDIX 13—Concluded.

30. Dr. B. L. Sethi,
Secretary, Indian Central Cotton Committee,
14, Nicol Road, Ballard Estate,
P.B. No. 1002, Bombay-1.

31. Dr. K. T. Jacob,
Director, Jute Agricultural Research Institute, Barrackpore, Calcutta.

32. Dr. M. S. Muthana,
Director, Indian Lac Research Institute,
Namkum, Ranchi.

33. Dr. R. Nagan Gowda,
M.L.A., Mysore State, Bangalore.

34. Dr. K. P. V. Menon,
Director, Central Coconut Research Station,
Kayangulam, Ochira P.O., Kerala.

35. Dr. G. S. Murty,
Director, Tobacco Research, Central Tobacco Research Institute, Rajamundry,
Andhra Pradesh.

36. Dr. R. Sankaran,
Secretary, Indian Central Oilseeds Committee, Hyderabad-1. (Andhra Pradesh).

37. Shri K. V. Ahmed Bavappa,
Officer-in-Charge, Central Arecanut Research Station, Vittal, South Kanara District, Mysore.

38. Dr. Arjan Singh,
Adviser (Agriculture), Ministry of Community Development and Cooperation (Department of Community Development),
Government of India, New Delhi.

39. Dr. M. D. R. Iyengar,
Deputy Director (Fisheries),
Ministry of Community Development and Cooperation, (Department of Community Development), Government of India,
New Delhi.

APPENDIX 14

List of publications issued

Books

1. Farmers of India Vol. I—Dr. M. S. Randhawa and Prem Nath
2. Preservation of Fruits and Vegetables—Dr. Girdhari Lal, G. S. Siddappa and G. L. Tandon
3. Beautiful Climbers of India—Dr. B. P. Pal
4. Rice in India (Reprint)—R. L. M. Ghose, M. B. Ghatge and V. Subrahmanyam
5. Dry Farming in India—N. V. Kanitkar with a supplement by S. S. Sirur and D. H. Gokhale
6. Textbook of Animal Husbandry—J. S. Srivastava and R.C. Khera

Monographs

7. The Phanerogamous Parasites—G. G. Subramanian and A. R. Srinivasan
8. Revision of Termite Genus Nasutritermes Bank etc.—Dr. Baini Prasad and P. K. Sen Sarma
9. Revision of termite Genus Hospitalitermes, etc.—Dr. Baini Prasad and P. K. Sen Sarma
10. The Fungi of India—E. J. Butter and G. R. Bishy, as revised by R. S. Vasudeva
11. Systematics of Oriental Termites—M. L. Roonwal and P. K. Sen Sarma
12. Studies on Desert Locust in India—Ramachandra Rao

Reports and Proceedings of Symposia

13. Report on Indigenous Agricultural Implements in India
14. First Report of Model Agronomic Experiments—Kharif
15. Effect of climate and Cultivation on Nitrogen and Organic matter Resources in Indian Soils
16. Physical Properties of certain chemical fertilizers under storage conditions
17. Fertilizer Practices of Farmers in West Godawari and Coimbatore
18. Plant Introduction Report
19. Proceedings of the Farm Forestry Symposium
20. Proceedings of the Symposium of Algology

Bulletins

21. The Chicory in India
22. Directory of Research Workers in Agriculture and Animal Husbandry in India
23. Revised List of Common Names of Indian Plant Diseases
24. Deep Black Cotton Soils of Raichur
25. Some Important Fruit Pests of North-West India
26. Urea as Fertilizer
27. Nutrition and Lactation in Dairy Cattle

APPENDIX 14—Concluded.

28. Effect of Residual Phosphorus on Crop Production
29. Use of Artificial Fertilizers
30. Relative Performance of Nitrogen Fertilizers
31. Review of Work done in Indian Medicinal and Allied Plants

Periodicals

1. Indian Farming (Monthly)
2. Kheti (Monthly)
3. Indian Horticulture (Quarterly)
4. Rice News Teller (Quarterly)
5. Indian Journal of Agricultural Science (Quarterly)
6. Indian Journal of Veterinary Science and Animal Husbandry (Quarterly)
7. Statistical News Letter (Quarterly)
8. Indian Potato Journal (Half-yearly)
9. Indian Journal of Agricultural and Veterinary Education (Half-yearly)

APPENDIX 15

AWARD OF THE RAFI AHMED KIDWAI MEMORIAL PRIZES FOR RESEARCH WORK DURING THE YEAR 1957

1.	Dr. B. P. Pal, Director, I.A.R.I.	Agricultural Botany
2.	Dr. L. B. Singh, Director , Hort. Research Station, Saharanpur	Horticulture
3.	Shri R. D. Tripathi, Biochemist, Hort. Research Station, Saharanpur	
4.	Shri M. R. Chandrasekhera, Junior Scientific Officer, C.F.T.R.I., Mysore	Dairying
5.	Dr. M. Swaminathan, Asstt. Director, C.F.T.R.I., Mysore	
6.	Dr. D. S. Bhatia, Asstt. Director, C.F.T.R.I., Mysore	
7.	Dr. V. Subrahmanyan, Director, C.F.T.R.I., Mysore	

Appendices 16 to 18

APPENDIX

ANNUAL ACCOUNT FOR I. C. A. R.

RECEIPTS

Head of Account	Receipt during the year	Total Receipts	Budget Estimates for 60-61	Revised Estimates
1	2	3	4	5
Opening Balance				
(i) Cash Balance	3,342·02	14,77,550·91	1,30,000	1,42,700
(ii) Bank balance	13,04,502·16	..	10,000	6,800
(iii) Prov. Fund Balance ..	1,69,700·73	..	..	..
I. *Receipt under the Agril. Produce Cess Act*	..	49,57,589·96	48,010	58,900
II. *Contribution and Grants* ..	..	..	..	..
(a) FROM CONSTITUENT STATES ..	Nil	..	4,000	2,900
(b) FROM CENTRAL GOVERNMENT ..	..	8,86,340·00	24,000	11,800
1. Production of Agril. Films ..	1,95,000·00	..	30,000	5,47,800
2. Publicity Propaganda under Rinderpest Scheme ..	41,000·00	..	16,000	20,000
3. Pilot investigation for collection of Stat. data on yield and extent of Cardamom ..	43,000·00	..	2,00,000	2,16,000
Cultivation and Practice adopted in its cultivation ..	..	..	500	300
4. Study of milk yield breeds and management practices of bovines	78,670·00	..	12,000 3,000	53,500 10,800
5. Pilot investigation for collection of Stat. data on Cashewnut cultivation	37,480·00	..	300	..
6. Scheme for operational Research and preparation of project reports at I.A.R.I. ..	3,000·00	..	22,000	5,500
7. Pilot survey for study of cultivation practice of pepper and influence on yield ..	2,000·00	..	64,480	24,500

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THE YEAR 1960-61

(RESEARCH SIDE)

PAYMENTS

Name of the Scheme	Actuals		Difference	Remarks
6	7		8	9
Standing Charges				Inconsiderable
Accounts and Audit	1,42,422·42	(+)	277·58	(a)
Travelling allowance of non-official members of the Council ..	6,728·09	(+)	71·91	(a)
Travelling allowance of members of the Committee of the Advisory Board and other persons invited to attend the meetings	59,223·80	(—)	323·80	(a)
T.A. of non-official members of the Board of Agriculture and A.H. in India	2,881·62	(+)	18·38	(a)
Miscellaneous Grant of V.P. ..	11,757·70	(+)	242·30	(a)
Editorial staff for Indian Farming and Kheti	5,39,890·62	(+)	7,909·38	(a)
Subsidies to various Journals ..	19,920·00	(+)	80·00	(a)
Intergrated Statistical Scheme ..	2,18,140·95	(—)	2,140·95	(a)
Publication of abstracts for Indian Journal of Veterinary science. ..	226·00	(+)	74·00	(a)
Publicity Scheme	52,875·24	(+)	624·76	(a)
Publication of a quarterly rice News Teller	10,888·42	(—)	88·42	(a)
Award of Gold medals to two Statistical Students	..		..	..
Printing of I.J.A.S. and I.J.V.S. and A.H. at private presses ..	5,438·39	(+)	61·61	(a)
Publication of a quarterly popular journal on Indian Horticulture ..	24,434·00	(+)	66·00	(a)

APPENDIX

	1	2	3	4	5
	–Do–	..	..	2,000	2,200
8.	Establishment of Research cum-testing Centres for bullock driven and manually operated—Agril. implements I.A.R.I.	82,470·00	.. .. ..	40,000 1,28,500 48,500	81,400 1,26,000 52,000
9.	Coord. Cattle Sterility ..	26,410·00	..	42,130	36,300
10.	Cost of Milk Production ..	94,200·00	..	1,80,000	84,500
11.	Wheat Rust Control ..	5,900·00	..	60,000	47,000
12.	Weed Control Scheme ..	2,000·00	..	10,000	..
13.	Scheme for Research and development of pepper and Cashewnut etc.	83,000·00	..	5,000	..
14.	Study of feeding and rearing practice of sheep and wool	75,000·00	..	..	..
15.	Study of Poultry Practice and Production	70,250·00	..	..	..
16.	Manurial and Agronomic Trials	46,960·00	..	..	..
(c)	From Special Grants ..	..	15,47,757·84	..	..
1.	I.C.C.C., Bombay ..	4,76,417·84	..	..	..
2.	I.C.T.C., Madras ..	2,000·00	..	2,000	..
3.	I.C.O.C., Hyderabad ..	9,30,560·00	..	..	..
4.	I.C.C.C., Bombay ..	2,000·00	..	..	800
5.	I.L.C.C., Ranchi ..	30,000·00	..	4,000	..
6.	I.C.O.C., Hyderabad ..	1,06,780·00	..	30,000	23,900
III.	*Interest from Investments* ..	..	6,37,792·90	..	..
1.	2¾% Loan, 1962 ..	26,059·59	..	18,31,150	10,50,000
2.	3% Loan, 1963–65 ..	49,361·14	..	..	..
3.	3¾% Loan, 1974 ..	1,33,245·00	..	..	..
4.	4% Loan, 1972 ..	74,248·00	..	..	300
5.	3% Loan, 1970–1975 ..	1,88,808·65	..	..	..

16—Contd.

6	7	8	9
Printing of quarterly Journal of Statistical News letter	2,167·48	(+) 32·52	(a)
Printing of Kheti	81,469·32	(—) 69·32	(a)
Publication of Indian Farming (Integrated Publicity Works) ..	1,26,735·73	(—) 735·73	(a)
Maintenance of Statt. Wing Building	51,604·93	(+) 395·07	(a)
Award of fellowship to Diploma Course Student in Agri. Statistics ..	35,114·16	(+)1,185·84	(a)
Establishment of a central distribution Section for the publications of the Council	84,133·82	(+) 366·18	(a)
Library	46,509·30	(+) 490·70	(a)
Abstraction of Horticultural Literature	..	..	..
Research Workers conference on Agr. and A.H.	..	..	..
Total ..	15,22,561·99		
B—*Research training and Publicity under direct Control of I.C.A.R.*			
(i) **AGRICULTURE**			
Indian Institute of Fruit Technology experiments on Kotka phosphate and di-calcium phosphate ..	..	..	..
Rice Research Workers Conference ..	..	..	..
Coordinated grass land Survey Scheme	658·79	(+) 141·21	(a)
Weed Control	..	..	..
Description of different varieties of fruit	23,221·73	(+) 678·27	(a)
Project for intensification of research in cotton oil seeds and millets ..	10,59,732·70	(+) 9,732·70	(F) Demand received late during the year.
Reconciliation of figures of tobacco crops between Andhra Pradesh and Tobacco Committee	289·77	10·23 (a)	X1. HQ. 78,638·11 2. Hyderabad 97,283·71

APPENDIX

	1	2	3	4	5
6.	3½% Govt. National Bonds 1961	35,310·50	..	..	17,700
7.	Fixed Deposit etc. ..	55,000·00	..	..	..
				7,120	6,700
8.	Interest on current account ..	1,136·39	..	..	..
9.	4% Loan, 1979	19,950·00	..	1,50,000	2,19,000
10.	Interest on short term deposit receipts	54,673·63	..	..	..
IV.	*Miscellaneous Receipts*				
1.	Receipts realised from Schemes	2,03,934·00	14,95,075·41	4,450	5,200
2.	Receipts on account of unspent balances of grants made by the Council	42,464·15	..	80,000	3,000
V.	*Misc. Receipts (Contd.)* ..	..	..	10,000	..
3.	Sale of publication ..	5,11,546·46	..	..	..
4.	Advertisements	63,144·23	..	5,710	..
5.	Hostel Rent	9,668·70	..	..	..
6.	Receipts realised from Pirrcom Schemes	39,875·80	..	50,700	..
7.	Disposal of articles ..	3,539·50	..	19,640	..
8.	Miscellaneous	6,20,902·57	..	..	700
VI.	*Debits and Remittances*				
1.	Loans and advances ..	10,741·64	3,44,815·69	..	2,500

16—Contd.

6	7	8	9
Ad-hoc Committee on Rice under I.C.A.R. Rice Committee ..	17,658·28	41·72 (a)	3. Coimbatore 78,800·22
Co-ordinated Wheat Rust control Scheme	5,851·95	848·05 (x)	4. Bellary 18,514·80
			5. Kanpur 87,850·36
Manurial trials and agronomic experiments	47,534·48 (+)		
		1,71,465·52 (x)	
			6. Sirsa 1,83,533·12
Spices and Cashewnut Show ..	7,510·14	(—) 2,310·14 (F)	7. 83,288·65
Scheme for preparing Agril. Handbook for India	3,000·00	..	8. I.A.R.I. 55,209·71
			9. Gwalior 64,291·96
Assignment of a Horticulture Expert from France	..	..	10. Power kheda 72,349·65
			11. Sardhana (Ajmer) 63,785·48
Installation of steam injectors to induce artificial rains	..	..	12. Surat 49,947·71
Sprinkling irrigation			13. Amravati 1,00,333·54
Proposal for obtaining the services of a Japanese expert	..	..	14. Dhadesgur 6,727·36
			15. Mohal 11,252·56
Conference on Hybrid Maize Seed	1,206·09	(—) 506·09 (a)	16. Dharwar 7980·76
		Total ..	10,59,732·70
			(x) Refunded to Govt. of India.
Conference of Research Workers on Plant Physiology 1960 ..	2,465·04	(+) 34·96	(a)

APPENDIX

1	2	3	4	5
2. Deposits and advances repayable	2,43,027·57	..	..	..
3. Other deposits and advances repayable	9,957·50	..	3,500	..
4. Recoveries from Research side staff on account of Tax. Prov. Fund	81,088·98	..	4,800	200
Total receipts plus opening balance	..	1,13,46,922·71		
Add: Investments and Re-investments	..	69,00,000·00		
Grand Total ..	..	1,82,46,922·71		
			65,000	52,100
			10,000	..
			8,800	1,000
			10,000	..
			95,720	72,300
			..	12,900
			45,000	33,000
			30,000	11,100
			9,000	3,100
			..	1,200
			20,000	7,500
			55,000	..
			..	..
			..	..
			..	..

16—Contd.

6	7	8	9
Seminar on recent advances in Agronomy and Soil Science ..	..	..	(a)
Fifth assignment of Dr. R. O. Whyte, F.A.O. Grassland Expert ..	120·59	79·51	Inconsiderable (a)
Conference of Entomological and Mycological Research workers ..	..	..	..
All India Fruit Shows	51,945·70	(+) 154·30	(a)
Publication of illustrated bulletins giving information about cultivation of individual drug plants ..	..	..	..
Donation of cups in flower show in different regions	1,000·00	..	..
Preparation of a book on flower annals by Shri L. Desai	..	..	..
Investigation into the method and practices of Farming	80,439·82	(—)8,139·82	(F)
Survey of Fertilizer Practices ..	12,810·61	(+) 89·39	(a)
Coordination of Research ..	33,513·54	(—) 513·54	(a)
Coordinated Maize breeding Scheme	10,508·85	(+) 491·15	(a)
Survey for the assessment of possibilities of cut flower business ..	3,050·98	(+) 49·02	(a)
Seminar on fruit and vegetable preservation I.C.A.R.	2,163·22	963·22	(a)
Implementation of Shri Mori's report on Floriculture in India ..	7,485·00	(+) 15·00	..
Seminar on disease of Horticultural Plants	..	..	..
Award of a prize for soil moisture deteriner	..	..	..
Distribution of hybrid maize seeds ..	..	..	..
Requisition for a Japanese expert to survey possible cities for laying gardens	..	..	..

APPENDIX

1	2	3	4	5
			25,600	..
			8,000	..
			2,000	600
			12,000	..
			7,000	4,200
			..	..
			..	900
			..	1,400
			4,000	..
			34,920	26,000
			..	100
			..	..
			2,700	..
			3,170	..
			2,010	5,000
			24,260	..
			..	..
			..	15,500

16—Contd.

6	7	8	9
Requisition of the services of a Japanese expert, particularly in the field of Rice cultivation	..	..	..
Preparation of reviews on Wheat, Millets, Pulses and Fodder Crops ..	..	..	..
Printing of the note on standard methods of multiplication and Distribution of improved seeds ..	529·05	(+) 70·95	(a)
Conference of entomological and Mycological Research Workers 1958 ..	..	..	..
Conference on Research Workers on Pulses 1960	3,563·35	636·65	(a)
Survey of Fertilizer practices (Revised)	..	..	..
Preparation of vegetation maps in India—I.C.A.R.	821·25	(+) 78·75	(a)
Establishment of Central Seed Corporation I.C.A.R.	1,382·43	(+) 17·57	(a)
Provision of nucleous staff to assist the Sorghum Specialist in collection of various varieties of Jowar and their maintenance	..	..	..
Total ..	13,78,463·36		
II. ANIMAL HUSBANDRY			
Appointment of a Liaison Officer for Sheep and Wool Schemes ..	24,345·47	(+) 1,654·53	(a)
Assignment of sheep and wool expert of F.A.O.	73·92	(+) 26·08	(a)
Monograph on ' Maintenance of farm animal in health '	..	..	..
Manual on preparation of animals for Indian Markets	..	..	..
Compilation and publication of Indian Dairy Year Book	..	..	..
Survey of the Yak and Cattle breeding operations in the interior hilly areas	4,857·52	(+) 142·48	(a)
Central A. H. Information Bureau ..	..	..	..
Yak Breeding	..	..	..
Co-ordination of Research on A. H. Creation of a Co-ordinated Unit ..	15,832·82	(—) 332·82	(a)

APPENDIX

1	2	3	4	5
			25,310	..
			1,900	..
			10,000	13,400
			..	800
			2,480	..
			10,000	..
			35,000	9,500
			10,000	10,000
			..	..
			..	5,600
			..	..
			2,81,820	71,400
			..	..
			7,00,000	6,10,000
			1,16,000	82,500
			..	..
			..	2,100
			..	..
			3,45,000	1,91,000
			1,67,690	35,900
			..	..

16—Contd.

6	7	8	9
Manual on ' Breeding of Farm animals in India '	..	..	..
Manual on ' Dairying in India ' ..	..	..	..
Intensified supervision and co-ordination on cattle breeding ..	13,301·13	(+) 98·87	(a)
Third Dairy Research Workers Conference	791·26	(+) 8·74	(a)
Preparation of a compendium on the animal nutrition investigation in West Bengal, I.C.A.R. ..	..	..	..
Definition of Commercial evolution of Graded Wools of Sheep brands ..	..	..	..
Cattle Sterility	..	..	..
Expansion of Central herdbook section	9,493·52	(+) 6·48	(a)
Central Dairy Information Bureau ..	9,862·96	(+) 137·04	(a)
Definition of ideal animal, I.C.A.R. ..	5,538·22	(+) 61·78	(a)
Monograph on ' Statistical Methods in A.H.	..	..	..
Total ..	84,096·82		
III. MISCELLANEOUS			
National index of field experiments ..	70,346·38	(+) 53·62	(a)
Assignment of Dr. F. Yates F.A.O. Expert	(—) 21·00	..	..
Revolving Fund	6,09,317·38	(+) 682·62	(a)
Study of milk yield breeds and management practices of Bovine ..	84,464·14**	(—) 1,964·14	**includes grant-in-aid to State Govt. as detailed below:
Training centres of land records ..	..	..	1. Orissa 9,670·00
Pilot Sample Survey, Pepper ..	2,036·14	63·86	2. Andhra Pradesh 32,586·00
Agricultural Exhibition at Ceylon and Amritsar	..	..	..
Setting up of Central Co-operative Film Production Unit	1,90,129·01	(+) 870·99	(a)
Cost of Milk Production in India ..	35,952·29	(—) 52·29	(a)
Producing campaign material and training of states personnel ..	..	..	..

APPENDIX

1	2	3	4	5
			..	..
			..	4,700
			..	10,500
			..	10,000
			1,00,000	2,600
			16,610	..
			..	5,600
			1,00,000	23,100
			60,000	58,100
			65,060	1,000
			28,000	50,400
			7,000	..
			4,20,550	35,200
			..	..
			..	..
			11,450	..
			5,000	4,000
			1,500	..
			8,500	..
			..	600

16—Contd.

6	7	8	9
Grant to the Aarey Milk Colony for purchase of books	..	..	..
Sale arrangements of the monographs of Commodity Committees ..	4,652·73	(+) 47·27	(a)
Display Advisory service ..	10,448·70	(+) 51·30	(a)
Grant of financial assistance to Agri. Horticulture Societies	10,000·00	..	..
Utilization of the services of retired scientists in the field of Agri. A. H. and allied sciences I.C.A.R. ..	2,413·50	(+) 186·50	(a)
Printing of all India Survey report on indigenous Agril. Implements in the country	..	..	..
International Seminar at World Agriculture Fair	5,525·41	(+) 74·59	(a)
Building of the I.C.A.R... ..	23,186·30	(—) 86·30	(a)
Indian Council of Agril. and Veterinary Education	57,428·37	(+) 671·63	(a)
Preparation of propaganda material for Rinderpest Eradication ..	842·20	(+) 157·80	(a)
Publicity campaign on Fertilizers ..	50,329·62	(+) 70·38	Rs. 50,000·00 only transferred to Date of Extension Ministry of F.&A.
Scheme of Potash requirements for cotton and other crops.. ..	..	..	
Supply of Agriculture information literature to the National Extension Service Blocks	35,188·70	(+) 11·30	(a)
Participation of the Council in World Agril. Fair	..	(—) 345·81	..
Setting up an Exhibition Unit ..	..	..	..
Crops cutting experiments on oils seeds U.P. and Madras, I.C.A.R. ..	..	..	..
Duplicating Section	3,872·47	(+) 127·53	(a)
Japanese method of paddy cultivation	..	..	..
Bulletin on Breeding procedure in different crop plants	..	..	..
Payment of honorarium to the authors for preparing reviewing the monographs to be printed at the Government press	603·00	(—) 3·00	..

APPENDIX

1	2	3	4	5
			9,000	..
			50,000	..
			2,95,650	..
			2,000	7,000
			30,000	26,400
			3,230	100
			..	4,300
			..	200
			..	..
			2,000	..
			500	..
			8,000	..
			..	..
			..	..
			7,000	7,500
			2,000	..
			1,85,320	1,47,000
			5,300	3,000

16—Contd.

6	7	8	9
Publication of Journal entitled ' Plant Breeding and Genetics News letter '	..	..	..
Printing of bulletins to be subsidised by the Council..	..	..	..
Research fellowship in Agriculture in various Institutes	2,07,191·00*	..	*H.Q. Rs. 4,189·45 (ii) States 2,03,001·55
Award for Prizes for improvement in Agril. Implements	6,714·03	(+) 85·97	(a)
			Total .. 2,07,191·00
Award of prizes for outstanding Research work done in the fields of Agriculture and Animal Husbandry and allied Sciences	26,325·26	(+) 74·74	..
Proposal to invite eminent Statisticians under Colombo Plan	100·00	..	..
Survey of indigenous implements ..	4,262·40	(+) 37·60	(a)
Conference on production, Distribution and popularization of improved Agricultural Implements	463·14	(—) 263·14	(a)
Publication of books in Hindi and Regional languages, I.C.A.R. ..	896·76	..	..
Revision of monograph on anatomy of Ox	..	..	..
Revision on manual on feeding of farm animals	..	..	..
Conference of Research Workers on Plant Physiology 1960, I.C.A.R. ..	..	..	..
National index of field experiments ..	..	..	..
Additional facilities to be provided at I.A.R.S. (I.C.A.R.)	..	..	..
Pilot Sample Investigation on the cultivation practices and yield on mango crops	8,125·93	(—) 625·93	(a)
Membership of international Hides and allied Trades Society Printing of the monograph on veterinary entomology and aerology for India ..	..	..	..
Building of the I.C.A.R. (Statistical Wing)	1,46,696·67	(+) 303·33	(a)
Fellowships in Statistics	2,831·33	(+) 168·67	(a)

APPENDIX

1	2	3	4	5
			..	..
			15,000	1,100
			9,000	10,000
			..	300
			..	300
			20,000	19,000
			10,000	..
			28,450	22,000
			10,000	..
			4,500	1,400
			14,100	3,300
			1,000	..
			1,16,000	44,200
			1,63,000	65,000
			2,65,000	91,400
			1,59,000	..
			..	..

16—Contd.

6	7	8	9
Hand book Indian Fodder and Forage Crops	..	..	..
Symposium on Algae	1,080·08	(+) 19·92	(a)
Pilot Project for study of yield and cultivation practices of fruit Crops	10,316·16	(—) 316·16	(a)
Intensive District Programme ..	309·00	(—) 9·00	(a)
Cultivation practices and yield of Lime Crops	230·00	(+) 70·00	(a)
Estimation of cost of Production of Cotton and other rotation crops ..	18,989·56	(+) 10·44	(a)
Supply of special publications of the Council on Subsidized rates ..	..	..	..
Pilot scheme for maintaining research project files	21,935·25	(+) 64·75	(a)
Enquiry into factors influencing Crops patterns on individual Farms ..	..	..	..
Pilot enquiry for ascertaining the cost of Poultry and egg production ..	1,350·00	(+) 50·00	(a)
Publication of Potato Journal ..	3,229·28	(+) 70·72	(a)
Translation into Spanish of the Book Statistical Methods for Agricultural Workers by Dr. Panse and Dr. Sukhatme	..	..	..
Pilot investigation for collection of data on Cardamom, I.C.A.R. ..	44,045·13	(+) 154·87	include grants made to the following States.
Pilot scheme for study of poultry practices, I.C.A.R.	64,856·41*	(+) 143·59	1. Mysore 15,000·00 2. Andhra 16,000·00
Study of feeding and rearing practices of sheep and yield of wool, I.C.A.R.	92,720·83	(—)1,320·83(F)	
			Total 31,000·00
Preliminary measures for training, investigation and preparation of project reports to be undertaken at Instt. of Agril. Research Statistics in connection with proposals made in the Five Year Plan regarding Statistics	..	..	*inclusive of grants. 1. Andhra 27,890·00 2. Kerala 19,000·00
Local cost of the foreign expert ..	..	..	Total 46,890·00

APPENDIX

1	2	3	4	5
			..	2,000
			2,000	..
			8,000	4,800
			1,690	..
			8,700	9,000
			3,500	..
			6,410	..
			5,570	4,200
			3,000	..
			8,150	..
			..	..
			1,440	..
			2,710	..
			7,850	5,800
			2,000	..
			7,000	100
			8,000	6,900
			10,000	7,800
			12,600	8,200

16—Contd.

6	7	8	9
Operational Research and preparation of Project reports at I.A.R.S. ..	1,975·03	(+) 24·97	(a)
Free supply of I.C.A.R. publications to the various agriculture and veterinary colleges in India	..	..	..
Publication of a quarterly Journal on Agricultural Education ..	4,747·11	(+) 52·89	(a)
Preparation of indices of scientific Journals of the I.C.A.R. viz. I.J.V.S. and A.H. and I.J.A.S. ..	..	..	..
Pilot scheme for study of incidence of pests and diseases of rice in Orissa, I.C.A.R.	8,974·12	(+) 25·88	(a)
Seminar on recent advantages in Agronomy and Soil Sciences ..	..	..	..
Statistical analysis of data of Co-ordinated scheme for Survey of Bacteriological qualities of Milk Supply	..	..	..
Total Miscellaneous ..	18,74,734·01		
C. *Grants-in-aid*			
(i) **AGRICULTURE**			
(a) Rice			
Improvement of paddy, M.P. ..	4,200·00	..	..
Rice Breeding Punjab	..	..	..
–do– Coorg (Mysore) ..	..	..	..
–do– Kashmir	..	..	..
–do– Kerala	..	..	..
Insect pests of paddy, West Bengal ..	..	..	..
Scheme for breeding short term strains possessing seed dormancy-Madras	5,800·00	..	..
Survey and collection of paddy, C.R.R.I., Cuttack	..	..	..
Blast and foot rot diseases of Rice and Wheat, Bombay	108·00	(—) 8·00	(a)
Rice Stem borer Madras ..	6,900·00	..	..
–do– Hyderabad ..	7,800·00	..	..
–do– West Bengal ..	8,169·80	(+) 30·20	(a)

APPENDIX

1	2	3	4	5
			8,500	7,000
			4,500	3,600
			6,140	..
			3,000	10,000
			5,120	500
			18,000	13,200
			5,900	9,000
			10,000	..
			6,900	4,600
			4,000	..
			5,000	6,000
			3,000	..
			5,930	..
			1,440	1,300
			15,160	9,000
			3,330	..
			4,000	11,000
			490	..
			..	6,900
			7,500	9,000
			9,430	..
			17,000	36,300
			5,000	..
			5,000	..

16—Contd.

6	7	8	9
Rice Stem borer, Andhra ..	7,000·00	..	..
Stem Rot disease of Rice, Madras ..	3,600·00	..	..
Breeding salt and flood resistant varieties of paddy, Assam ..	..	..	..
Boro paddy, W. Bengal	9,900·00	(+) 100·00	(a)
Breeding salt and flood resistant varieties of paddy, Kerala ..	489·86	(+) 10·14	(a)
–do– W. Bengal	13,101·04	(+) 98·96	(a)
Scheme for work on Rice in saline areas, Andhra	8,880·00	(+) 20·00	(a)
Cultural studies with upland paddy, W. Bengal	..	..	..
Blast resistance of paddy, Coimbatore Madras	4,600·00	..	..
Micro-nutrient studies on crop plants, Madras	..	..	..
Microbiological, chemical and agronomic studies on the soils of Kuttanad, Kerala	6,000·00	..	..
Investigation on Boro paddy, U.P. ..	..	..	..
Deep water paddy, U.P. ..	..	..	..
–do– Mysore ..	1,400·00	(—) 100·00	(a)
Scheme for evolution of superior saline and alkaline resistant strains, Madras	8,800·00	(+) 200·00	(a)
Scheme for the improved technique of Chinese methods of cultivation, U.P.	..	..	..
Hill Paddy, U.P.	11,000·00	..	..
Draught resistant strains of paddy, Kerala	..	..	..
–do– Madras ..	6,900·00	..	..
Deep water paddy, Andhra ..	9,000·00	..	..
Helminthosporium diseases of rice, W. Bengal	..	..	..
Rice improvement scheme, Kashmir	36,265·64	(+) 34·36	(a)
Improvement of Rice, H.P. ..	..	..	..
Evolving gall-fly resistant varieties of rice, A.P.	..	..	..

APPENDIX

1	2	3	4	5
			6,000	8,500
			8,900	8,000
			..	..
			..	..
			8,830	6,600
			7,000	14,000
			..	..
			..	..
			..	4,500
			..	..
			..	..
			..	..
			..	1,500
			..	2,000
			..	..
			..	..
			..	..
			..	..
			..	..
			6,000	2,300
			8,500	8,000
			6,220	2,200
			2,800	2,100
			18,000	30,000
			9,000	7,600

16—Contd.

6	7	8	9
Breeding varieties resistant to piricularia, Madras ..	8,422·00	(+) 78·00	(a)
–do– Andhra ..	8,000·00	..	..
Study on paddy Agromyzed Fly Hyderabad (Andhra)	..	..	..
Improvement of hill paddy, Assam ..	..	..	..
Study of Nitrogen fixation blue green Algae in Rice Soils, Madras ..	6,600·00	..	..
Scheme for Cytological, anatomical and entomological studies on rice, C.R.R.I.	13,940·00	(+) 60·00	(a)
Experiment on Chinese method of cultivation, A.P.	..	..	..
–do– Assam ..	..	..	..
–do– Bihar ..	1,500·00	..	..
–do– Bombay ..	..	..	..
–do– Jammu and Kashmir	..	..	..
–do– Kerala ..	..	..	..
–do– M.P. ..	1,500·00	..	..
–do– Madras ..	2,000·00	..	..
–do– Mysore ..	..	..	..
–do– Punjab ..	..	..	..
–do– U.P. ..	..	..	..
–do– Orissa ..	..	..	..
–do– W. Bengal ..	..	..	..
Breeding non-lodging, non-shading and flood resistant Paddy, M.P. ..	2,270·00	(+) 30·00	(a)
Breeding Paddy for lift irrigation areas, Andhra	8,000·00	..	..
Tabi nurseries of Paddy, Andhra ..	2,200·00	..	..
Bacterial Blight diseases of Paddy, Bombay	2,100·00	..	..
Breeding strains resistant to lodging of Rice, C.R.R.I.	30,000·00	..	..
Induction and study of Amphiploidy in Rice, West Bengal	7,600·00	..	..

APPENDIX

1	2	3	4	5
			3,900	3,500
			11,170	4,700
			50,000	70,000
			4,600	..
			..	..
			3,000	..
			3,000	..
			5,630	..
			18,000	16,400
			6,230	..
			3,000	300
			..	..
			14,450	..
			1,00,000	65,000
			1,14,200	1,00,000
			28,300	15,000
			34,000	26,900
			34,000	14,000
			44,000	24,300
			52,110	20,000
			32,000	34,000
			37,800	26,000

16—Contd.

6	7	8	9
Investigation of false smut of Paddy, Andhra	3,500·00	..	..
Evolution of Paddy, strains for inundated areas, Madras	4,700·00	..	..
Evolving improved varieties of Rice, Kerala	70,000·00	..	..
Total ..	3,32,246·34		
WHEAT AND OTHER CEREALS			
Maize Breeding and Paddy, West Bengal	..	..	(a) Inconsiderable ..
Research on storage of Pulses, I.A.R.I.	..	..	..
Selection of draught resistant varieties of Wheat and Barley, Sikkim ..	1,300·00	(—) 1,300·00	(F) Demand of funds received late.
Improvement of Mongori Pacha Jonna, Andhra Pradesh	..	..	..
Hybrid Corn seed Vivekananda Laboratory, Almora	..	..	..
Improvement of Pastures and Legumes, I.A.R.I.	16,400·00	..	..
Nutritive value of wheat I.A.R.I. ..	..	..	..
Improvement of Pastures and Legumes, Bombay	264·00	(+) 36·00	(a)
Foot Rot of Wheat, Bombay ..	..	..	..
Hybrid Maize, Mysore	..	..	..
Co-ordinated Maize breeding scheme, I.A.R.I.	65,000·00	..	..
–do– Kashmir ..	1,00,000·00	..	..
–do– Mysore ..	15,000·00	..	..
Co-ordinated Maize breeding scheme, W. Bengal	26,900·00	..	..
–do– Bihar ..	14,000·00	..	..
–do– Punjab ..	24,283·73	(+) 16·27	(a)
–do– Gujarat ..	20,000·00	..	..
–do– U.P. ..	34,000·00	..	..
–do– Rajasthan ..	26,000·00	..	..

APPENDIX

1	2	3	4	5
			..	20,000
			1,640	86,200
			32,100	6,500
			27,000	14,300
			32,000	20,000
			6,690	..
			5,660	..
			..	..
			..	..
			..	1,300
			3,890	..
			5,150	15,000
			7,000	13,400
			5,620	10,000
			1,100	2,700
			15,060	10,000
			6,300	6,100
			7,000	6,200
			5,000	..
			6,500	9,000
			3,950	3,900
			9,000	10,000
			14,900	5,200

16—Contd.

6	7	8	9
Coordinated Maize breeding scheme, Vivekananda Laboratory, Almora ..	19,147·57	(+) 852·57	(a)
–do– Andhra ..	86,140·00	(+) 860·00	(a)
–do– M.P. ..	6,100·00	(+) 400·00	(a)
–do– Punjab (Kangra)	14,300·00	..	..
Interspecific and Intergeneric Hybridization of Indian Wheats Poona, Bombay	19,880·00	(+) 120·00	(a)
Development of suitable nutritions Pasture grasses and legumes at different altitude and climatic conditions, Punjab	..	..	..
Fodder Production under rainfed and irrigated conditions, Kerala ..	..	..	..
Coordinated Wheat Rust Control, Bombay (Nimphad)	..	..	..
–do– Vivekananda Laboratory, Almora	..	..	..
Wheat Breeding, Rajasthan ..	1,320·00	(—) 20·00	..
Barley improvement, Rajasthan ..	..	..	..
Research on fodder production, W. Bengal ..	15,120·00	(—) 120·00	(a)
–do– Bihar ..	13,400·00	..	..
–do– Mysore ..	10,000·00	..	..
–do– Coorg (Mysore)	2,682·22	(+) 17·78	(a)
–do– Bhopal (M.P.)	9,817·71	(+) 182·39	(a)
–do– Andhra ..	6,100·00	..	..
–do– Madras ..	6,200·00	..	..
Cytology of Indian Grasses, M.P. ..	..	..	..
Scheme for Cytological automical and embryological studies on wheat, Maize, Phaolus and Cayus, New Delhi	9,000·00	..	..
Hybrid *Jowar*, Almora (U.P.) ..	3,900·00	..	..
Improvement of pasture grasses and legumes, Dharwar (Mysore) ..	10,000·00	..	..
Production of hybrid Maize seed at C.M.F., Suratgarh	5,135·00	(+) 65·00	(a)

APPENDIX

1	2	3	4	5
			5,610	..
			..	..
			2,500	1,000
			2,000	2,700
			43,200	5,400
			10,400	9,700
			2,000	3,000
			5,830	4,600
			6,000	..
			4,000	5,000
			14,000	..
			..	..
			..	..
			..	..
			6,460	5,600
			4,000	..
			6,580	4,600
			9,290	1,400
			..	..
			4,000	..
			..	..
			9,660	3,200
			6,000	8,400
			6,090	..

16—Contd.

6	7	8	9
Cytogenetical studies on Maize, Andhra University	..	..	..
Maize Breeding, U.P.	..	..	..
Evolution of drought resistant strains of sorgham, Madras	1,000·00	..	..
Opening of one Wheat Breeding Station at Washim in Vidharba, Bombay	2,700·00	..	..
Co-ordinated Maize breeding Sikkim	5,400·00	..	..
Cytogenetics of leguminous Crops Presidency College, Calcutta ..	9,700·00	..	..
Cytogenetics of wild grasses, Madras ..	3,000·00	..	..
Control of wilt of Maize, Bihar ..	4,600·00	..	..
Drought resistance in Wheat, M.P. ..	..	..	..
Total ..	6,07,790·23		
(c) Millets and Pulses			
Pulse breeding, M.P. (Gwalior) ..	5,000·00	..	..
Hybrid *Bajra*, Bombay	..	..	..
Striga attack on Sorgham, Andhra ..	..	..	..
Hybrid Combu, Madras ..	..	..	..
Jowar and *Bajra* Breeding Saurashtra (Bombay)	..	..	..
Diseases of *Bajra*, Anand Institute ..	5,590·00	(+) 10·00	(a)
Investigation on the Pests of Pulses, Bombay	..	..	..
Evolution of new varieties of Dolichos Lablab, Coimbatore, (Madras) ..	4,600·00	..	..
Improvement of Pulses, Kerala ..	1,400·00	..	..
–do– West Bengal ..	..	..	..
Scheme for Investigation embryology of Indian Pulses at Vidharbha Mahavidyalaya, Amravati (Bombay)	..	..	..
Small Millets, Mysore	..	..	..
Pulse Research, Assam	3,200·00	..	..
Improvement of Pulses, Andhra ..	8,400·00	..	..
Pulse Breeding, W. Bengal ..	..	..	..

APPENDIX

1	2	3	4	5
			..	..
			..	..
			..	..
			3,000	..
			7,000	3,800
			14,220	..
			20,330	..
			35,100	..
			18,700	15,800
			10,940	1,600
			18,200	14,200
			12,300	11,000
			21,550	21,600
			10,000	6,900
			5,890	5,400
			8,500	..
			64,900	..
			20,000	..
			2,500	1,700
			2,000	..
			5,000	..
			3,000	..

16—Contd.

6	7	8	9
Pulse Breeding, Orissa	..	..	..
–do– Assam	..	..	..
–do– Andhra ..	..	..	..
Total ..	28,190·00		
(d) FRUITS			
Horticulture Tharsa (Bombay) ..	..	..	..
–do– Orissa ..	3,750·00	(+) 50·00	(a)
–do– Hydrabad (Andhra) ..	..	..	..
–do– Mysore ..	..	..	..
–do– H.P. ..	..	..	..
Orange cultivation, Coorg (Mysore)	15,775·50	(+) 24·50	(a)
Virus diseases and other disorders of stone hill fruits D.S.B. College, Nainital, U.P.	1,582·00	(+) 18·00	(a)
Banana Research, Madras ..	14,104·00	(+) 96·00	(a)
–do– Bombay ..	11,000·00	..	..
–do– W. Bengal ..	21,536·05	(+) 64·95	(a)
–do– Andhra ..	6,840·00	(+) 60·00	(a)
Citrus Manurial Trials, Punjab ..	5,400·00	..	..
Remedial measures against Sanjose scale of Kashmir	..	..	..
Establishment of Horticultural plant Introduction Station at Saharanpur, U.P.	..	..	..
–do– Hassarghatha (Mysore) ..	..	..	..
Cytogenetical studies on grapes and related wild species, Madras ..	1,640·00	(+) 60·00	(a)
Investigation of root, rot limb breakage, Andhra	..	..	..
Twig-blight diseases of orange, West Bengal	..	..	..
Improvement and Development of Rhodedendrons and Orchids (Chakrata) U.P.	..	..	..

APPENDIX

1	2	3	4	5
			1,950	..
			25,000	..
			3,000	..
			13,530	..
			7,700	7,000
			4,470	4,000
			5,780	4,000
			10,610	10,000
			4,280	2,000
			6,880	3,200
			54,000	68,000
			20,000	34,900
			8,500	7,400
			7,700	..
			..	..
			10,000	7,000
			8,200	3,600
			6,800	6,300
			6,000	4,000
			2,500	..
			35,800	23,300
			60,000	39,000
			7,160	1,500
			6,800	..
			4,650	4,200

16—Contd.

6	7	8	9
Cultivation of legumes in orange orchards, Tripura	..	..	..
Pilot project for the amelioration of the die back disease of Citrus, Sikkim ..	..	..	(F) Demand of funds received late.
Cultivation of Apple, Madras ..	..	..	..
Research on pineapples, W. Bengal ..	..	..	..
Citrus root stock trials, Andhra ..	6,890·00	(+) 110·00	(a)
Date Palm Research, Kutch (Bombay)	4,000·00	..	..
Orange Research, Kerala ..	3,550·00	(+) 50·00	(a)
Anab-Shahi grape cultivation, Andhra	9,900·00	(+) 100·00	(a)
Banana Research sub-Station, East Khandesh	2,000·00	..	..
Papaya Research Station, Bombay ..	3,200·50	(—) 0·50	(a)
Co-ordinated study for the application of growth regulating substances in horticulture, Punjab	68,000·00	..	..
–do– Andhra ..	34,830·00	(+) 70·00	(a)
–do– I.C.C.C. ..	7,320·00	(+) 80·00	(a)
–do– Kerala ..	3,970·00	(—) 3,970·00	(F)
Cytogenetical Investigation on fruit trees, Calcutta University ..	..	..	..
Banana Research, Kerala ..	7,000·00	..	..
Research on pineapple, Kerala ..	3,510·00	(+) 90·00	(a)
Improvement and stabilization of off season bearing of mango in Kanya Kumari, Madras	6,290·00	(+) 10·00	(a)
Wilt disease of guava, W. Bengal ..	3,980·00	(+) 20·00	(a)
Research in Fruits, Kashmir ..	..	..	
Investigation in die-back diseases of citrus, I.A.R.I.	23,300·00	..	..
–do– Coorg (Mysore)	38,942·00	(+) 58·00	(a)
–do– Bombay ..	1,410·00	(+) 90·00	(a)
Embryology and Anatomy of Citrus, Punjab	..	..	..
Subhumid Tropical Fruit Research Station, Andhra	4,160·00	(+) 40·00	(a)

APPENDIX

1	2	3	4	5
			..	6,000
			2,000	..
			830	..
			15,300	..
			..	..
			..	..
			7,320	..
			5,000	..
			2,570	4,600
			6,600	7,400
			8,500	6,900
			10,000	..
			15,450	20,000
			500	..
			..	1,700
			5,000	3,600
			1,000	3,000
			..	3,000
			..	..
			..	7,500
			7,500	14,000
			9,500	7,500
			20,750	6,600

16—Contd.

6	7	8	9
Improvement of Date Palm, Punjab ..	5,900·00	(+) 100·00	(a)
Establishment of Fruit Research Stations in Plains, U.P. ..	..	..	..
Training in fruit and vegetable preservation, Andhra	..	..	..
Mycological and Entomological investigations of fruits, U.P.	..	..	..
Horticultural investigation, U.P. (Chaubattia)	..	..	..
Coordinated scheme on the effect of chemicals on the storage of fruit and vegetables, C.F.T.R.I. ..	..	..	..
–do– Assam ..	..	..	..
–do– Punjab ..	..	..	..
Research on cashewnut, Andhra ..	4,510·00	(+) 90·00	(a)
–do– Bombay ..	7,330·00	(+) 70·00	(a)
Bunchy top disease of Bananas Travancore, Cochin (Kerala) ..	6,820·24	(+) 79·76	(a)
Intensification of Research on nuts, walnuts, peanut etc., H.P. ..	..	..	..
Selection of nucellar root stocks in citrus species, U.P.	20,000·00	..	..
Improvement of *Ber* fruits, Saurashtra, Bombay ..	..	..	..
–do– V.P. (M.P.) ..	1,660·00	(+) 40·00	..
–do– Pepsu (Punjab) ..	3,600·00	..	..
–do– Ajmer (Rajasthan)	3,000·00	..	..
Improvement of *Ber* fruits, M.P. ..	2,940·00	(+) 60·00	..
Fruit Preservation, B.R. College, Agra	..	..	..
Improvement of *Ber* fruit trees, Pepsu (Punjab)	7,500·00	..	..
Improvement of pineapple by application of growth regulating substances (Gauhati University) Assam ..	14,000·00	..	..
Research on pests of vegetables and fruit trees, Punjab	7,500·00	..	..
Research on pests of citrus, Aurangabad, Bombay ..	6,600·00	..	..

APPENDIX

1	2	3	4	5
			4,000	..
			8,640	..
			15,250	..
			5,130	2,000
			2,000	2,000
			3,180	..
			13,940	..
			..	1,400
			..	25,000
			5,000	4,000
			50,000	24,000
			1,140	..
			10,000	35,000
			8,000	6,800
			1,000	..
			45,000	..
			9,35,460	..
			14,310	..
			9,102	..
			8,500	3,700
			..	4,000
			2,500	..
			..	..

16—Contd.

6	7	8	9
Investigation of Fruit pests, Andhra ..	..	..	..
Intensification of Research on Sub-tropical in lower hills of Valley area, H.P.	..	..	..
Research on Raisin grapes Lahul Valley, Punjab	..	..	..
Banana Diseases, Madras ..	2,150·00	(—) 150·00	(a)
Fruit preservation, Annamalai University	2,000·00	..	..
Evolution of new varieties of Mango, grapes and citrus, Punjab ..	..	..	..
Citrus manurial Trial, Punjab ..	..	..	..
Hill Fruit Research Scheme, U.P. ..	1,324·00	(+) 76·00	..
Horticultural Research Scheme ..	25,000·00	..	..
Physiological studies on factors governing root formation in cutting and layering of fruits, Calcutta University	4,000·00	..	..
Co-ordinated scheme for the improvement of muskmelon and water melon, I.A.R.I.	23,750·00	(+) 250·00	..
Training in fruit preservation, Bihar ..	..	..	..
Research on Cashewnuts, Mysore ..	34,612·59	(+) 387·41	..
–do– Kerala ..	6,718·20	(+) 81·80	..
Control of serious diseases of guava, Ajmer (Rajasthan)	..	..	..
Fruit preservation, M.P.	..	..	..
Total Fruits ..	5,04,795·08	..	..
(e) VEGETABLE			
Potato seed certification survey, I.A.R.I.	3·50	(—) 3·50	(a)
Tuber crops, Bombay	..	..	..
Tuber crops, Bihar	3,640·00	(+) 60·00	(a)
Tuber crops, Mysore	4,001·15	(—) 1·15	(a)
Anatomical and embryological studies in Potato, C.P.R.I.	..	..	..
Tuber crops, Andhra	..	..	..

APPENDIX

1	2	3	4	5
			2,610	1,300
			19,820	..
			4,000	..
			2,400	3,400
			..	..
			..	300
			10,690	9,000
			28,000	23,600
			12,400	8,500
			14,000	8,000
			1,000	..
			5,200	5,200
			4,400	3,600
			12,000	..
			15,000	11,000
			15,000	..
			8,650	10,000
			5,420	13,300
			13,300	9,200
			10,000	14,100
			10,000	..
			18,070	..
			8,800	2,000
			..	..
			20,000	3,200

16—Contd.

6	7	8	9
Improvement of perennial vegetables, Madras	1,290·00	(+) 10·00	(a)
Improvement of Vegetables, Assam ..	..	..	..
Development of Mushroom Cultivation, H.P.	..	..	..
Cytological studies of common vegetables, Calcutta University ..	3,400·00	..	..
Investigation on pests of Vegetables, Andhra	..	..	..
Tuber crops, Madras	278·00	(+) 22·00	(a)
Tuber crops and related plants. T. University	8,918·00	(+) 82·00	(a)
Tapioca and Sweet Potato Travancore Cochin, Kerala	23,599·04	(+) 0·96	(a)
Improvement of Vegetable, Bombay ..	8,500·00	..	..
Improvement of Vegetable, U.P. ..	8,000·00	..	..
–do– Pepsu (Punjab)	..	..	..
Onion Research, Andhra ..	5,200·00	..	..
Improvement of onion and garlic, W. Bengal	3,600·00	..	..
Vegetable Research Station, Andhra ..	..	..	..
Improvement of Vegetable, Madras ..	10,999·00	(+) 1·00	(a)
–do– Kashmir	..	..	..
–do– Punjab ..	10,044·60	(—) 44·60	(a)
–do– Hyderabad (Andhra)..	13,270·00	(+) 30·00	(a)
Improvement of Vegetable, W. Bengal	9,130·00	(+) 70·00	(a)
–do– M.P. ..	14,025·62	(+) 74·38	(a)
–do– V.P. (M.P.)	..	..	..
–do– H.P. ..	..	..	..
Cytogenetical Investigation of the important cucurbitaceous, vegetables of Eastern India, Calcutta University	1,950·00	(+) 50·00	(a)
Potato growing Areas, I.A.R.I. ..	..	..	..
Improvement of Vegetables, Sikkim	3,200·00	..	..

APPENDIX

1	2	3	4	5
			9,000	..
			6,640	2,000
			4,750	2,650
			3,810	..
			3,560	..
			5,000	..
			2,99,740	..
			1,830	..
			4,000	3,000
			6,390	10,000
			3,210	800
			4,000	..
			..	..
			12,000 (Z)	..
			52,930	..
			20,000	17,000
			22,000	11,000
			9,000	13,000
			12,000	..
			2,500	..
			(7,390) ( ) ( )	
			6,000	..
			2,500	..
			1,600	12,000

16—Contd.

6	7	8	9
Production of foundation seeds of Temperate Region Vegetables, H.P. ..	..	..	..
Onion Research, Bombay ..	2,000·00	..	..
Agronomic Investigation on few important Vegetable Agriculture, Poona	2,120·00	(+) 530·00	(a)
Investigation of Agronomical requirement of improved strains of Vegetable crops, Anand.. ..	..	..	..
Improvement in the nutrition quality of Indian Vegetables, I.A.R.I. ..	..	..	..
Cultivation of *Singhara*, Orissa ..	..	..	..
Total ..	1,37,168·91		
(f) Other Crops			
Chillies Research, I.A.R.I. ..	..	..	..
–do– Mysore ..	3,000·00	..	..
–do– Madras ..	10,000·00	..	..
Cardamoms Research, Madras ..	758·27	(+) 41·73	..
Ginger, Madras	..	..	..
–do– Kerala	..	..	..
Development of pepper, Kerala ..	..	..	..
Medicinal plants, Assam ..	..	..	..
–do– F.R.I. ..	17,000·00	..	..
–do– Kashmir ..	11,000·00	..	..
–do– W. Bengal ..	12,900·00	(+) 100·00	(a)
–do– Himachal Pradesh	..	..	..
Cultivation of Kuth in the Lahul Valley, Punjab	..	..	..
Development of pyrethrum cultivation in India, I.A.R.I.	..	..	..
Development of pyrethrum cultivation in India, Kashmir	..	..	..
Cashewnut Development, Kerala ..	..	..	..
–do– Orissa ..	..	..	..
Pepper Research Panniyur, Kerala ..	11,889·31	(+) 110·69	(a)

APPENDIX

1	2	3	4	5
			9,830	3,840
			55,120	17,000
			13,000	..
			700	..
			10,240	10,000
			9,150	8,600
			11,000	..
			..	6,000
			14,770	8,900
			..	..
			9,630	..
			35,000	31,000
			27,000	51,000
			39,340	21,800
			10,210	..
			5,680	..
			49,070	39,400
			5,000	3,300
			5,000	1,600
			4,600	4,000
			4,800	..
			..	..
			7,500	8,300
			3,000	..

16—Contd.

6	7	8	9
Establishment of Pepper Research Station, Mysore	3,800·00	(+) 40·00	(a)
Establishment of Regional spices Research Station, Coorg, Mysore ..	17,100·00	(—) 100·00	(a)
Cultivation and development of Ginger, Kerala	..	..	..
Spices, West Bengal	..	..	..
Cloves Nutmeg and Coco, Madras ..	10,000·00	..	..
Turmeric Research (Revised), Orissa ..	8,600·00	..	..
Botanical improvement of the essential oil yielding plants, I.A.R.I. ..	..	..	..
Coordinated schemes for Control of katee disease of cardamom, Kerala	5,920·00	(+) 80·00	(a)
–do– Mysore..	8,900·00	..	..
–do– I.A.R.I.(for t.a. only)..	..	..	..
Cashewnut Research Scheme, Mysore	..	..	..
Establishment of a research station for cardamom, Kerala	31,140·00	(—) 140·00	(a)
–do– Mysore ..	50,969·04	(+) 30·96	(a)
Establishment of research station of Pepper, Kerala	21,807·50	(—) 7·50	(a)
Turmeric, Andhra	..	..	..
Ginger, Assam	..	..	..
Composite Research Station for pepper, cardamom and cashewnut, Assam	39,358·70	(+) 41·30	(a)
Chillies, West Bengal	3,300·00	..	..
–do– M.P. (Vidarbha) ..	1,590·00	(+) 10·00	(a)
–do– Andhra	3,877·00	(+) 123·00	(a)
–do– Hyderabad	..	..	..
Control of Hairy Caterpillar of Cardamom, Mysore	..	..	..
Improvement of lemon grass, Kerala	8,230·31	(+) 68·69	(a)
Research on pepper and cardamom, Orissa	20·12	(—) 20·12	(a)

APPENDIX

1	2	3	4	5
			..	..
			16,000	8,300
			8,300	8,600
			11,000	9,200
			5,000	4,600
			7,000	6,200
			1,000	8,400
			5,45,290	..
			2,360	4,400
			10,000	..
			11,840	11,600
			15,000	..
			360	..
			..	..
			12,000	7,300
			7,000	4,900
			10,000	..
			8,860	1,700
			5,460	2,400
			5,210	5,000
			3,000	2,000
			4,800	..

16 —Contd.

6	7	8	9
Research on Pan, M.P.	..	..	..
Scheme for research and development of Vanilla cultivation of Kerala ..	8,300·00	..	..
Cultivation of camphor in Wynad, Kerala	8,600·00	..	..
Scheme for cultivation of medicinal plants in cinchona plantations, Madras	9,181·77	(+) 18·23	(a)
Ginger Research Scheme in the Himalayan Areas, W. Bengal ..	4,600·00	..	..
Root Crops, West Bengal ..	6,200·00	..	..
Spices, Delhi University ..	8,320·00	(+) 80·00	(a)
Total ..	3,26,363·02		
(g) Soils and Manures			
Micronutrients studies in the soils, Punjab	4,333·91	(+) 66·09	..
Collection of soil survey data, I.A.R.I.	..	..	..
Usarland Reclamation, Punjab ..	11,600·00	..	..
Soil standardisations method, Bombay	..	..	..
Soil and plant growth, Agra ..	..	..	..
Nitrogen fixation in soils, M.P. ..	..	..	..
Foliar application of nutrient to crops, I.A.R.I.	7,300·00	..	..
Study of fertility index of soils, field research station, Bombay ..	13,750·00	(—) 8,850·00	(F)
Investigation of Kharland in Bombay State, Bombay	..	..	..
Comparative efficiency of Ammonial and Nitrate Fertilizers on paddy, I.A.R.I.	1,700·00	..	..
Soil Structure studies, Punjab ..	2,400·00	..	..
Scheme for studies on soil structure in Andhra Pradesh	5,000·00	..	..
Ammonium sulphate to paddy lands, W. Bengal	2,000·00	..	..
Salinity Research Scheme, B.R. College, Agra	..	..	..

APPENDIX

1	2	3	4	5
			3,840	5,400
			170	..
			2,100	..
			29,630	..
			570	5,300
			5,490	7,000
			3,830	..
			..	..
			6,410	..
			4,140	2,200
			4,000	..
			2,050	..
			6,230	..
			..	4,800
			65,000	1,46,000
			16,000	12,370
			5,940	5,500
			1,000	..
			2,000	..
			10,760	13,000
			1,660	..
			2,130	1,070
			2,500	9,400

16—Contd.

6	7	8	9
Soil erosion, Rajasthan, Jaipur ..	5,100·00	(+) 300·00	(a)
Storage of fertilizer, I.A.R.I. ..	..	..	..
Nitrogen Fixation in Soil, Sheila Dhar Institute	..	..	..
Rapid Soil Test, I.A.R.I.	..	..	..
Studies in the cost of reclamation of Kalar (Alkali) lands, Khalsa College, Amritsar (Punjab)	5,284·00	(+) 16·00	(a)
Possibilities of using carbons in improvement and reclamation of soil, Punjab University	7,000·00	..	..
Trace element in Indian soils (Revised), I.A.R.I.	..	..	..
–do– ..	..	..	..
Working out the method of application of liquid ammonia under village condition, Bihar	..	..	..
Scheme for studies on acid soil of Kerala	2,200·00	..	..
Alkali reclamation, Andhra ..	..	..	..
Slay mineral Contents of Indian soil, W. Bengal	..	..	..
Soil conditioners, W. Bengal ..	..	..	..
Nitrogen fixation, Andhra ..	4,800·00	..	..
Usarland reclamation, Lucknow ..	1,45,670·00	(+) 330·00	(a)
Composition of plants in usarlands	12,400·00	(—) 30·00	(a)
Phosphatic reversion in Nilgiris, Madras	5,500·00	..	..
Examining the behaviour of certain additional Chemical fertilizers, I.A.R.I.	..	..	..
Saline and alkaline Control in Punjab soils, Punjab	..	..	..
Reclamation of saline and Alkaline Lands, Madras	13,000·00	..	..
Phosphorus Nutrition of Crops, Andhra	..	..	..
Treatment of Saline water for irrigation	1,100·00	(—) 30·00	(a)
Role of exchangeable bases and humus in plant nutrition, Field Research Station, Bombay	9,400·00	..	..

APPENDIX

1	2	3	4	5
			8,800	6,400
			2,830	5,300
			14,870	10,000
			13,390	7,000
			7,140	6,000
			5,770	..
			4,860	..
			5,020	..
			..	..
			8,890	..
			..	..
			..	..
			..	200
			..	4,000
			5,000	..
			6,000	..
			5,880	2,000
			..	..
			..	..
			..	..
			..	..
			..	..
			..	..

16—Contd.

6	7	8	9
Maximisation of phosphate Potential in soils, Madras	6,400·00	..	..
Nitrogen fixation, Bombay-Anand ..	5,300·00	..	..
Reclamation of Saline and Alkaline lands, Rajasthan	10,000·00	..	..
Biological Nitrogen fixation, Bombay	6,900·00	(+) 100·00	(a)*
–do– Bombay-Poona	6,000·00	..	..
–do– Punjab ..	..	..	..
Biological Nitrogen Fixation, W. Bengal	..	..	..
–do– Andhra Pradesh	..	..	..
Simple fertilizer trials Rajasthan (Sumerpur)-	..	..	..
–do– H.P. (Unipar)..	..	..	..
–do– Kerala (Chala Kundi) ..	..	..	..
–do– Orissa (Kala-handi) ..	..	..	..
–do– I.A.R.I. ..	160·00	(+) 40·00	(a)
Paddy soil, Annamalai University, Madras	3,900·00	(+) 100·00	(a)*
Biological and Physico-chemical studies in Paddy soils, Madras ..	..	..	..
Bacterisation experiments using phospho-bacterin and Ayetobacterin cultures, I.A.R.I.	..	..	..
Co-ordinated scheme for the use of chemical and leaf analysis as means of diagnosing nutrient requirement of crop plants, Kanpur (U.P.) ..	2,000·00	..	..
–do– C.R.R.I. ..	..	..	..
–do– Andhra ..	..	..	..
Model Agronomic Experiments, Bombay	..	..	..
–do– Kerala ..	..	..	..
Model agronomic experiments, Agra (U.P.)	..	..	..
–do– Satna (M.P.) ..	..	..	..

APPENDIX

1	2	3	4	5
			..	..
			..	..
			..	..
			..	..
			..	..
			8,500	..
			4,170	..
			1,650	5,230
			..	..
			4,380	..
			..	..
			5,510	..
			..	..
			3,890	..
			8,000	7,500
			..	4,600
			2,000	..
			3,98,890	..
			7,240	12,000
			1,200	8,000
			..	..

16—Contd.

6	7	8	9
Model agronomic experiments, M.P. (Obedullahgunj)	..	..	..
–do– A.P. (Chalvoi)	..	..	..
–do– U.P. (Kanpur and Banaras) ..	..	..	..
–do– Burdwan, West Bengal ..	..	..	..
–do– Hyderabad Andhra ..	..	..	..
Micronutrients studies of soils, Bombay	..	..	..
–do– Kerala ..	..	..	..
Usarland reclamation Sheila Dhar Institute	5,200·00	(+) 30·00	(a)
Model Agronomic experiments, Hyderabad (Mysore) Gangawal Centre	..	..	..
Scheme for the investigation of actmomycete population on paddy soil, Annamalai University	..	..	..
Studies in microflora of Soils, I.I.Sc. Bangalore	..	..	..
Manurial experiments, Bihar ..	..	..	..
–do– M.P. (Bhopal)	..	..	..
Azatobactor inoculation of crops, W. Bengal	..	..	..
Intake of different farms of phosphate by Green Manuring crops, Madras	7,200·00	(+) 300·00	(a)
Standardization of methods for determining	4,600·00	..	..
(a) Surface area, and			
(b) P.M. value of soil, Punjab University			
Total ..	3,17,197·91	..	..
(h) AGRONOMY			
Investigation into the method of practices of farming, Punjab ..	12,240·00	(—) 240·00	(a)
–do– Rajasthan ..	8,000·00	..	..
–do– Jammu and Kashmir ..	..	..	..

APPENDIX

1	2	3	4	5
			1,570	4,000
			1,000	..
			4,430	5,000
			1,400	..
			3,900	6,300
			2,420	..
			10,300	10,000
			..	..
			..	..
			..	..
			..	2,400
			..	..
			..	..
			2,000	..
			2,570	..
			2,000	..
			4,970	5,200
			13,000	..
			2,000	2,300
			1,640	..
			1,500	..
			3,650	3,500
			3,630	100
			11,900	4,600
			16,440	11,500

16—Contd.

6	7	8	9
Investigation into the method of practices of farming, Himachal Pradesh ..	4,000·00	..	..
–do– Uttar Pradesh	..	..	..
–do– Bihar ..	5,000·00	..	..
–do– Orissa ..	..	..	..
–do– Andhra ..	6,290·00	(+) 10·00	(a)
–do– Madras ..	..	..	..
–do– M.P. ..	10,000·00	..	..
–do– Manipur ..	..	..	..
–do– Tripura ..	..	..	..
–do– Mysore ..	..	..	..
–do– Kerala ..	2,300·00	(+) 100·00	(a)
–do– Assam ..	..	..	..
–do– W. Bengal ..	..	..	..
Lay farming, U.P.	..	..	..
Study of the frequency of irrigation and relative efficiency of three methods of irrigation, viz., flood, furrow and over head sprinkler irrigation, College of Agri. Rajasthan ..	..	..	..
Investigation into the possibility of using sprinkler irrigation system for Agri. purposes in the sandy tract of Coastal, A.P.	..	..	..
Green manuring scheme, Bihar ..	5,124·64	(+) 73·36	(a)
–do– C.R.R.I. Orissa	..	..	..
–do– M.P. ..	2,250·00	(+) 50·00	(a)
–do– I.C.J.C. Calcutta	..	..	..
–do– H.P. ..	..	..	..
–do– A.P. ..	3,430·00	(+) 70·00	(a)
–do– Mysore ..	65·88	(+) 34·12	(a)
–do– U.P. ..	4,600·00	..	..
Relation between moisture contents and fertility level and selected cropping scheme, Allahabad Agri. Instt...	11,412·00	(+) 88·00	(a)

APPENDIX

1	2	3	4	5
			14,480	..
			14,950	7,000
			2,000	..
			11,000	9,100
			4,000	5,000
			6,250	..
			5,000	..
			6,400	5,400
			3,300	..
			6,880	23,200
			12,520	7,400
			..	..
			3,500	8,500
			..	..
			..	..
			..	..
			56,300	..
			59,890	..

16—Contd.

6	7	8	9
Research on placement of fertilizers for *jowar*, groundnut, Cotton etc., Dharwar (Mysore)	(—) 2,658·00	..	..
Agronomic Research on black soils region of South India, Madras ..	6,780·00	(+) 220·00	(a)
Water requirements of crops at Central Field Research Station, Poona ..	..	..	..
Agronomic aspects of *jowar*, Amravati, Bombay	9,044·41	(+) 55·59	(a)
Agronomical investigations on fodder crops, U.P...	5,000·00	..	..
Project for investigation and mapping the water budget of India and its vicinity and its use in irrigation and flood control, M.J. College, Jalgaon	..	..	..
Fundamental studies on mixed cropping, I.A.R.I.	..	..	..
Physiological studies on water relation of crop plants, Calcutta University	5,400·00	..	..
Study of comparative merits of Hyperphosphate and bonemeal against rock phosphate fertilizer in acid soil regions of Kerala, Mysore, W. Bengal and Assam, I.C.A.R. ..	..	..	..
Agronomic aspects of Green Manuring, Bombay	23,126·00	(+) 74·00	(a)
Water requirement of crops, D.V.C.	7,370·00	(+) 30·00	(a)
Total ..	1,28,774·93		
(i) PHYSIOLOGY			
Physiology of rice flowering, West Bengal ,.	..	..	..
Rice Physiology, Calcutta University	8,500·00	..	..
Storage and viability of pollen grains, Delhi University	..	..	..
Use of phytophormones for higher yields, Bombay	..	..	..
Chemical stimulation of Ovules, Delhi University	..	..	..
Plant physiology and sub-station plant introduction bureau, Vivekanand Laboratory, U.P.	..	..	..
Total ..	8,500·00		

APPENDIX

1	2	3	4	5
			10,000	..
			15,280	..
			6,340	..
			..	..
			1,500	6,100
			6,250	..
			4,010	..
			8,190	6,300
			3,970	2,700
			9,930	1,700
			9,930	6,900
			9,930	..
			9,930	7,090
			9,930	..
			3,050	..
			4,170	..
			4,580	..
			4,580	8,100
			4,280	..

16—Contd.

6	7	8	9
(j) ENTOMOLOGY			
Intensification of Termite Research, Anand	..	..	..
I.A.R.I. ..	..	..	..
Studies on the comparative efficiency of some fumigants against stored grain Pests, I.A.R.I.	..	..	..
Investigating the use of distress calls of birds feeding on grains crops, Bombay	..	..	..
Nutritional and Biological studies on Insects, I.A.R.I.	6,100·00	..	..
Systematic and Biological studies of ardent fauna, Delhi University ..	..	..	..
Augmenting the marmed insect, collection Agriculture College, Coimbatore	..	..	..
Physiological relationship between insect and their host plants, Delhi University.	6,800·00	..	..
Survey of beneficial Coccinallids and investigations into their utilization in the control of aphid, Coccids and mite pests of crops, Mysore ..	2,700·00	..	..
Coordinated research scheme on the study of field rats, Madras ..	1,700·00	..	..
–do– Punjab ..	7,000·00	(—) 100·00	(a)
–do– U.P. ..	..	..	..
–do– Andhra Pradesh	7,800·00	..	..
–do– Bombay ..	..	..	..
Scheme for investigation on Forage insects, Rajasthan	..	..	..
Studies on Aphids under Taxonomy (Dr. S. Banerji), W. Bengal ..	..	..	..
Biology and control of 'Aphid' under Dr. A. S. Srivastawa, Govt. Entomologist, U.P...	..	..	..
Biology and control of 'White flies' under Dr. M. Q. Khan, Govt. Entomologist, A.P.	8,100·00	..	..
Biology and control of 'Mites' under Dr. E. S. Narayanan, I.A.R.I. ..	..	..	..

APPENDIX

1	2	3	4	5
			4,290	..
			4,580	5,300
			4,580	9,000
			4,580	500
			4,580	..
			7,020	6,100
			4,800	..
			11,190	..
			7,000	10,900
			7,200	..
			21,500	20,000
			4,170	9,000
			6,500	3,300
			13,000	13,000
			4,800	..
			6,700	..
			5,600	5,800
			6,000	5,800
			23,000	22,200
			30,000	..
			1,800	..

16—Contd.

6	7	8	9
Taxonomy studies of 'Mites' under Dr. E. S. Narayanan, I.A.R.I. ..	..	..	..
Biology and control of 'Mites' under Shri Joshi, Punjab Government ..	5,300·00	..	..
Biology and control of 'Aphids' under Dr. C. L. Arora, Punjab University..	8,880·00	(+) 120·00	(a)
Biology and control of 'White flies' ..	8,480·00	(+) 20·00	(a)
Biology and control of 'Mites' under Dr. A. C. Sain, Bihar ..	..	..	..
Scheme on Chalcid parasite of Coicids, Muslim University, Aligarh ..	6,780·00	(+) 20·00	(a)
Termite research, F.R.I.	..	..	..
Nitrogen metabolism of phytopathogenic Fungi, Delhi University ..	..	..	..
Scheme for control of Caterpillar of Cardamom, Mysore	10,870·00	(+) 30·00	(a)
Morphology and biology of Common Paddy cutworm, Aligarh ..	..	..	..
Termite research scheme (Toconomy) Zoological Survey of India (Calcutta)	20,240·00	(—) 240·00	(a)
Taxonomic studies on 'Jasside' under Dr. G. L. Arora, Punjab University..	5,000·00	..	..
Study of the rates of decomposition of insecticide deposits, Osmania University, Hyderabad ..	3,250·00	(+) 50·00	(a)
Research on fungicides, I.A.R.I. ..	13,000·00	..	..
–do– Punjab ..	..	..	..
–do– Poona (Bombay)	..	..	..
–do– Coimbatore (Madras) ..	4,000·00	..	..
–do– West Bengal ..	5,800·00	..	..
Exploration of Toxicity Hazards in the use of modern insecticides, I.A.R.I.	22,200·00	..	..
Exploration of Toxicity hazards in the use of modern insecticides of cattle and human beings, I.V.R.I. ..	..	..	..
Scheme for studies on Aphidae, West Bengal	..	..	..

APPENDIX

1	2	3	4	5
			7,100	6,500
			7,760	3,300
			..	..
			5,140	3,800
			15,000	8,900
			12,000	3,000
			..	2,000
			2,990	..
			7,200	..
			2,480	10,700
			3,69,710	..
			44,140	..
			16,830	..
			12,560	..
			3,990	..
			6,580	3,700
			23,020	6,400
			10,260	10,100
			4,660	..
			6,000	..
			15,660	..
			3,820	2,500

16—Contd.

6	7	8	9
Work on bio-essay and other techniques in the study of plants diseases, Madras University	6,500·00	..	..
Research on toxicity and adverse effect of synthetic pesticides, Madras ..	3,206·55	(+) 93·45	(a)
Weed control, Bombay	..	..	..
Control of nematodes on betelvine in Nasik Distt. Bombay	3,800·00	..	..
Termite research, F.R.I.	8,900·00	..	..
–do– I.A.R.I. ..	3,000·00	..	..
Weed control, B. R. College, Agra ..	2,000·00	..	..
Scheme for fungicides, U.P. ..	..	..	..
Building up named reference collection of insect pests at the Agricultural College, Baptala (Andhra) ..	..	..	..
Fundamental research on toxicity and mode of action of insecticides, Punjab University College, Hoshiarpur ..	16,700·00	..	..
Total ..	1,98,106·55		
(k) Mycology			
Virus diseases, Poona	..	..	..
–do– Simla	..	..	..
–do– Delhi	..	..	..
Scheme for studies on spore contents of the atmosphere, Andhra University	..	..	..
Coordinated scheme for control of kattee diseases of Cardamom, Bombay	3,621·00	(+) 79·00	(a)
Control of Pan diseases, M.P. ..	6,370·00	(+) 30·00	(a)
Zira disease, Rajasthan	10,040·00	(+) 60·00	(a)
Ergot production, Assam	..	..	..
–do– W. Bengal ..	..	..	..
Investigation into the role of liopoic acid in plant-metabolism with radio-active traces, Bose Research Institute Calcutta	..	..	..
A monographic study of the Asperigilli and penicilli of India, Allahabad University	2,500·00	..	..

APPENDIX

1	2	3	4	5
			12,000	12,000
			9,450	6,600
			3,400	2,700
			11,140	..
			..	..
			10,000	26,200
			6,000	3,000
			600	..
			3,520	..
			120	..
			30,780	22,220
			75,000	18,500
			50,000	18,700
			..	..
			..	..
			..	..
			19,150	..
			2,450	2,100
			5,670	4,000
			6,110	6,000

16—Contd.

6	7	8	9
Establishment of betelvine Research Station, A.P.	11,850·00	(+) 150·00	(a)
Foorki diseases of Cardamom, West Bengal	6,600·00	..	..
Betelvine Wilt disease, Madras ..	2,620·00	(+) 80·00	(a)
Taxonomic and Physiological Studies on the plant parasitic namatodes of Agricultural Importance and their control, I.A.R.I.	..	..	..
Development of Herbarium cryptogamal orientals, I.A.R.I. ..	..	..	..
Coordinated plant virus Scheme Eastern Zone, I.A.R.I. ..	26,200·00	..	..
Control of Bundha Parasite, B.R. College, Agra	3,000·00	..	..
School of Research, Calcutta Uni. ..	..	..	..
–do– I.A.R.I. under Dr. Vasudeva ..	..	..	..
Fungicidal sprays, I.A.R.I. ..	..	..	..
Total ..	72,801·00	..	..
(l) Floriculture			
Cytogenetical and Physiological studies in relation to floriculture, I.A.R.I. ..	22,040·00	(+) 160·00	(a)
Development of floriculture, Sikkim ..	18,500·00	..	..
Ways and means for helping outstanding new series for pertaining their valuable collections, Sikkim ..	18,700·00	..	..
Coordinated scheme on floriculture with one of its centres at, Poona ..	..	..	..
–do– Calcutta and Darjeeling ..	..	..	..
Research and Development on floriculture, Punjab (Pepsu)	..	..	..
Development of Rose variety of essential oils, I.A.R.I. ..	..	..	..
Coordinated scheme on floriculture, Andhra	2,040·00	(+) 60·00	(a)
–do– I.A.R.I. ..	4,000·00	..	..
–do– Mysore ..	6,000·00	..	..

APPENDIX

1	2	3	4	5
			39,400	..
			28,660	..
			21,070	2,000
			19,990	3,000
			21,070	6,100
			6,100	6,200
			36,280	..
			..	..
			3,400	1,800
			25,600	12,200
			15,000	..
			3,900	3,000
			2,000	..
			..	..
			5,490	8,000
			..	500
			20,000	..

16—Contd.

6	7	8	9
–do– other centres ..	..	..	..
Maintenance and preparation of seeds and bulbs of imported ornamental plants, main centre, Srinagar ..	..	..	..
–do– Sub-centre Simla	2,000·00	..	..
–do– Sub-centre Mussoorie ..	3,000·00	..	..
–do– Ootacamund ..	6,070·00	(+) 30·00	(a)
Floriculture, Assam	6,150·00	(+) 50·00	(a)
Total ..	88,500·00		
(m) General			
			Abstracts
Introduction of economic plants, I.A.R.I.	..	(a) Rice	3,32,246·34
Survey of Fertilizer Practices, U.P. ..	..	(b) Wheat and other cereals	6,07,790·23
Morphological, Ecological and physiological studies on Algae from Usarlands, Lucknow University ..	1,800·00	(c) Millet & Pulses	28,190·00
		(d) Fruit	5,04,795·08
Studies of genetics and Variability of algae, I.A.R.I.	12,200·00	(e) Vegetable	1,37,168·91
		(f) Other crops	3,26,363·02
Pre-soaking seed in nutrient salt, Indore	..	(g) Soils & Manure	3,17,197·91
–do– Vivekananda Laboratory Almora	3,000·00	(h) Agronomy	1,28,774·93
–do– I.A.R.I. ..	..	(i) Physiology	8,500·00
Survey of fertilizer Practices, Punjab	..	(j) Entomology	1,98,106·55
		(k) Mycology	72,801·00
–do– M.P.	8,000·00	(l) Floriculture	88,500·00
Grants for exhibition of paintings and photographs of trees, flowers and land-scape, Bombay	500·00	(m) General	25,500·00
Total ..	25,500·00	Total ..	27,75,933·97*
C. Grants-in-aid			
Total Agri. Sch. ..	27,75,933·97*		
(II) ANIMAL HUSBANDRY			
(a) Cattle Breeding			
Livestock investigation, Punjab ..	..	..	..

APPENDIX

1	2	3	4	5
			14,000	3,600
			..	..
			20,000	..
			..	7,500
			..	..
			14,700	31,000
			25,800	71,000
			4,180	12,500
			60,000	42,500
			90,000	..
			5,650	57,200
			10,000	10,600
			3,000	..
			24,030	45,000
			..	..
			..	2,400
			25,000	25,000
			6,000 (b)	..
			15,000	..
			20,000	12,000

16—Contd.

6	7	8	9
Immune Genetics of Indian Cattle, I.V.R.I.	3,576·00	(+) 24·00	(a)
Improvement of Kangayam breed, Madras	..	..	..
Cattle improvement and insurance, Punjab	..	..	..
Causes of degeneration of Indian Cattle, I.V.R.I.	7,460·16	(+) 39·84	(a)
Pilot Key Village Scheme, U.P. ..	..	..	..
Comparative Study of Selective breeding of Purnea, Bihar	31,000·00	..	..
Selective breeding and grading up of cattle, W. Bengal	70,805·15	(+) 194·85	(a)
Thickness of skin and distribution of sweat glands of buffaloes in relation to milk production, I.V.R.I. ..	12,600·00	(—) 100·00	..
Camel Farm for the Bikaneri breed and opening of 10 Key village centres, Rajasthan	42,500·00	..	..
Evolution of a new type of pig by cross-breeding, Sikkim	..	..	..
Evolving a new type of pig by cross-breeding, U.P.	57,200·00	..	..
Evolving methods of sterilization of scrub cows, I.V.R.I.	10,600·00	..	..
Evolving suitable draught capacity measure for bullocks, I.V.R.I. ..	..	..	..
Selective breeding and grading up of cattle (Kaira type), Orissa ..	45,000·00	..	..
Metabolic effects of harmones in relation to induced lactation, U.P. ..	..	..	..
Definition of the breed characteristics of Caoles cattle and Berari buffaloes, M.P.	2,380·00	(+) 20·00	(a)
Relative value of selective breeding and grading up of Unbalachary cattle, Madras	25,000·00	..	..
Determining the age, maturity of Indian Bulls, Orissa	..	..	..
Rearing on sex behaviour of breeding of bulls, Madras	..	..	..
–do– N.D.R.I. ..	12,000·00	..	..

APPENDIX

1	2	3	4	5
			27,000	..
			5,760	4,500
			17,000	15,000
			30,000	..
			45,000	32,500
			20,000	25,000
			40,000	15,000
			20,470	1,400
			12,290	..
			10,060	..
			..	..
			..	..
			12,370	16,000
			14,000	55,000
			32,000	16,000
			15,000	24,000
			15,000	..
			8,250	28,000
			14,000	13,500
			4,190	..
			14,000	28,500
			14,300	15,000
			..	..
			7,680	12,200
			8,000	31,500

16—Contd.

6	7	8	9
–do– Anand ..	..	..	..
Physiology of hump development and sheath of cattle veterinary College, Calcutta, Bengal	4,500·00	..	..
Rearing on sex behaviour of breeding of bulls, Bihar	15,000·00	..	..
–do– Mysore ..	..	..	..
Physiological genetics of cattle, West Bengal	32,488·32	(+) 11·68	(a)
Selective breeding and grading up of indigenous cattle, Orissa ..	25,000·00	..	.
Cattle Breeding Research, H.P. ..	15,000·00	..	..
Production studies in Kankej cows and C.D.R.I.	1,330·00	(+) 70·00	(a)
Re-production studies in Kankej Cows and Sindhi Buffaloes, Anand ..	..	..	..
Coordinated cattle sterility, I.V.R.I.	..	..	..
–do– U.P. ..	..	..	...
–do– Bihar ..	..	..	..
–do– Osmania University ..	15,920·00	(+) 80·00	(a)
Artificial insemination, I.D.R.I. ..	54,978·43	(+) 21·57	(a)
Progency testing of Murrah buffaloes, Bulls, Bombay	16,000·00	..	..
Cross-breeding of cattle, Andhra ..	22,500·00	(+) 1,500·00	(a)
–do– Assam ..	..	..	..
–do– Madras ..	28,000·00	..	..
–do– Bihar ..	13,500·00	..	..
Central artificial insemination sub-station, Calcutta	..	..	..
Cross-breeding of cattle, U.P. ..	28,301·90	(+) 198·10	(a)
–do– West Bengal ..	15,000·00	..	..
Physiological norms of Indian cattle, West Bengal	..	..	..
Cross-breeding of cattle, Punjab ..	12,201·90	(—) 1·90	(a)
–do– Kerala ..	31,580·00	(—) 80·00	(a)

APPENDIX

1	2	3	4	5
			20,350	10,000
			8,600	..
			25,000	11,000
			15,000	16,000
			34,000	..
			6,000	4,500
			6,000	5,800
			..	..
			10,000	10,000
			10,000	10,000
			..	..
			11,800	..
			15,000	12,500
			9,840	9,000
			11,710	3,500
			..	2,500
			5,000	11,000
			..	..
			7,000	..
			26,530	15,000

16—Contd.

6	7	8	9
Cross breeding of local non-descript cattle, Andhra	10,000·00	..	..
Cross breeding of cattle in heavy rainfall areas (Neyyetmkara centre), Kerala	..	..	..
Scheme for investigation of the possibility of spreading out the breeding season in buffaloes, I.V.R.I. ..	11,860·00	(—) 860·00	(a)
Cross breeding of cattle in hilly and heavy rainfall areas, Mysore ..	16,000·00	..	..
Scheme for investigating the comparative value of grading up with Sindhi bulls and cross breeding with Jersy bulls for increased milk production, Kerala.	..	..	..
Total ..	6,89,281·86		
(b) Goat and Sheep Breeding			
Development of mutton breeds of sheep, Bombay.	4,500·00	..	..
–do– Chingleput, Madras	5,800·00	..	..
Indigenous goat breeding, Punjab ..	..	..	..
Sheep Research Station, Punjab ..	10,000·00	..	..
Meat and mohir goat, Bombay ..	10,000·00	..	..
Sheep breeding, Punjab	..	..	..
–do– Kashmir ..	..	..	..
Establishment of research units of sheep production in mixed farming, Madras	12,370·00	(+) 130·00	(a)
Angora goat breeding, U.P. ..	9,000·00	..	..
Improvement of sheep in hills, West Bengal	3,500·00	..	..
Improvement of goat, Orissa ..	2,478·25	(+) 21·75	(a)
–do– West Bengal ..	10,932·95	(+) 67·05	(a)
Soil analysis for J. & K. sheep breeding, I.A.R.I.	..	..	..
Exploring the possibilities of Mohir Production, Andhra	..	..	..
Development of mutton breeds of sheep, Andhra	15,000·00	..	..

APPENDIX

1	2	3	4	5
			19,590	11,200
			1,900	..
			34,000	20,700
			12,730	10,000
			10,000	25,000
			20,000	25,700
			6,000	6,000
			9,500	..
			10,000	30,000
			20,000	1,10,000
			12,020	90,000
			15,000	..
			5,000	..
			25,000	25,000
			9,000	..
			4,440	..
			1,180	..
			2,640	..
			6,000	..
			25,000	..
			40,000	13,200
			70,000	96,300

16—Contd.

6	7	8	9
Establishment of research units for study of sheep production in mixed farming economy, Punjab ..	11,171·50	(+) 28·50	(a)
Definition of breeds of sheep, Rajasthan	..	..	..
Sheep and Wool improvement on regional basis, U.P.	20,660·00	(+) 40·00	(a)
–do– Bombay, (Joria Centre) ..	10,000·00	..	..
–do– Bihar ..	25,000·00	..	..
–do– Madras Revised	25,698·31	(+) 1·69	(a)
Developing strains of goats for Mohir production, Himachal Pradesh ..	6,000·00	..	..
Development of mutton breeds of sheep, Mysore	..	..	..
Sheep and wool improvement on regional basis, Rajasthan ..	30,000·00	..	..
–do– H.P. ..	1,10,000·00	..	..
–do– Jammu & Kashmir	90,000·00	..	..
–do– Jammu (revised)	..	..	..
–do– Mysore ..	..	..	..
–do– Bombay (Poona)	25,246·00	(—) 246·00	(a)
Developing strains of goats for milk production, Kerala	..	..	..
Influx of extronment on some of the exotic and Indian breeds of sheep, U.P.	..	..	.
Defining characteristics of breeds of sheep, Bombay, North Gujarat ..	..	..	.
Normal worm burden in sheep and wool, Punjab	..	..	.
Developing strains of goats for milk production, Bombay	..	..	..
Sheep production in mixed farming, economy, Rajasthan	..	..	..
(c) Animal Nutrition			
Animal nutrition, Punjab ..	13,140·00	(+) 60·00	(a)
–do– Bombay ..	96,280·00	(+) 20·00	(a)

APPENDIX

1	2	3	4	5
			40,890	50,000
			40,000	25,000
			23,000	..
			30,000	37,600
			..	750
			30,000	21,700
			33,900	38,000
			35,000	3,000
			5,000	3,100
			6,000	7,400
			6,000	..
			4,470	2,500
			6,000	..
			4,200	..
			2,500	2,500
			6,640	4,000
			17,610	13,000
			7,000	..
			7,000	..
			7,000	..
			6,750	..

16—Contd.

6	7	8	9
Animal nutrition, I.D.R.I. ..	50,000·00	..	..
–do– W. Bengal ..	24,940·00	(+) 60·00	(a)
Utilization of waste product for feeding of cattle, Orissa	..	..	..
Urea as a protein substitute, I.V.R.I. ..	37,600·00	..	..
Influence of trace elements on the health and production capacity of Livestock, I.V.R.I.	746·00	(+) 4·00	(a)
Further work on paddy straw, I.V.R.I.	21,680·00	(+) 20·00	(a)
Nutrition requirements of buffaloes, Agra	37,890·96	(+) 109·04	(a)
Scheme for conducting experiments on the Economics of poultry, ration, Madras	3,000·00	..	..
–do– Punjab ..	3,040·00	(+) 60·00	(a)
–do– U.P. ..	7,340·00	(+) 60·00	(a)
–do– Mysore ..	..	..	..
Systematic supply of poultry ration, Punjab	2,500·00	..	..
Pilot scheme for popularizing ready to feed balanced poultry food mixture, Rajasthan	..	..	..
Evolving economy poultry, ration, Bombay	..	..	..
Systematic study of poultry nutrition, Punjab	2,500·00	..	..
Scheme on economics of poultry ration, Madhya Pradesh ..	4,000·00	..	..
Comparative efficiency of cows and buffaloes in milk production at different levels of nutritions, Anand ..	13,000·00	..	..
Investigations on the toxic plants and herb lethal to domestic animal, Mysore	..	..	..
–do– Madras ..	..	..	..
–do– U.P. ..	..	..	..
Study of chemical constituents and hae-matological aspects of different breeds, Mysore	..	..	..

APPENDIX

1	2	3	4	5
			11,440	..
			9,840	..
			44,700	53,000
			4,000	..
			4,500	..
			11,570	3,400
			9,620	..
			10,000	..
			20,000	21,000
			12,000	9,600
			10,000	..
			24,000	16,000
			25,000	400
			26,24,590	..
			300	..
			..	..

16—Contd.

6	7	8	9
Development of suitable nutrition pasture grasses and legumes at different altitude and climatic conditions, H.P.	..	..	..
Introduction of annual irrigated pastures on arable land in Military Farms Wing, Meerut	..	..	..
Studies on the effect of feeding economic balanced common mixtures as against cotton seeds or cotton seed cakes on buffaloes, Anand ..	53,000·00	..	(a) Inconsiderable.
To investigate into the causes of degeneration of Jamnapari goats when taken away from home tract, U.P. to find out cheap poultry ration and its effect on growthrate, egg production, etc., Bihar	..	..	..
.....	..	..	..
Causes of reproductive failure in buffaloes cows in the summer months, U.P.	3,350·00	(+) 50·00	(a)
Investigation on toxic plants and herbs lethal to domestic animals, Punjab	..	..	..
Pilot scheme for popularizing ready to feed balanced poultry feed, Delhi Cantt.	..	..	..
Studies on feed requirements of sheeps under range and agricultural conditions, I.V.R.I.	20,900·00	(+) 100·00	(a)
Co-ordinating Officer, animal nutrition, I.V.R.I.	9,601·00	(—) 1·00	(a)
Animal nutrition stations provision for Jeeps etc. (to be allotted to various centres)	..	..	..
Scheme on the investigation on the nutritional requirements of pigs, I.V.R.I.	16,000·00	..	..
Investigation on the quality of wool and meat in relation to nutrition of sheep, B. R. College, Agra ..	332·00	(+) 68·00	(a)
Total ..	4,20,839·96		
(d) Animal Pests, Diseases and Cure			
Veterinary Investigation Officer, (Cattle), Kerala	..	..	..
–do– Punjab ..	..	..	..

APPENDIX

1	2	3	4	5
			6,300	..
			5,000	..
			11,000	..
			..	..
			..	..
			..	..
			10,700	4,800
			47,000	55,700
			1,960	..
			..	..
			..	..
			..	9,800
			..	..
			11,400	15,000
			2,160	..
			5,670	..
			7,000	..
			8,070	..
			8,690	..
			7,990	2,900
			6,520	2,200
			3,320	7,000

16—Contd.

6	7	8	9
–do– West Bengal ..	..	..	..
–do– Saurashtra And Kutch ..	..	..	..
–do– Rajasthan ..	..	..	..
–do– Ajmer-Marwara	..	..	..
–do– Kashmir ..	..	..	..
–do– Mysore ..	..	..	..
Assistant Disease Investigation Officer (sheep and goat), Rajasthan ..	4,752·00	(+) 48·00	(a)
Investigating the possibilities of large scale manufacture of M.S. Adjutant Vaccine, I.V.R.I.	55,622·86	(+) 77·14	(a)
Investigation of the use of stabiliser in Rinderpest and Ranikhet vaccine, U.P.	..	..	..
V.I.O. (sheep and goats) (Hyderabad), Andhra	..	..	..
–do– Orissa ..	..	..	..
–do– Mysore ..	9,796·49	(+) 3·51	(a)
–do– U.P. ..	..	..	..
Biological control of Fascioliasis by introduction of ducks, Andhra Pradesh	15,000·00	..	..
V.I.O. (sheep & goats) Jammu and Kashmir	..	..	..
Control of liver fluke infection, Jammu and Kashmir	..	..	..
–do– Himachal Pradesh	..	..	..
Control and eradication of Equizootic Lymphangitis amongst equidae, D.A.R.V.F.	..	..	..
Provision of technical and clerical staff to the Coordinating Officer (Mastitis Schemes), I.V.R.I.	..	..	..
Provision of technical and clerical staff to the Coordinating Officer (Humpsore Scheme), I.V.R.I. ..	2,850·00	..	..
A.D.I.O. Pigs, Punjab	2,137·75	(+) 42·25	..
–do– Andhra	7,000·00	..	..

APPENDIX

1	2	3	4	5
			2,720	..
			5,350	5,400
			4,780	..
			..	..
			9,350	4,000
			10,000	..
			3,000	..
			3,450	..
			2,880	2,000
			17,800	13,000
			7,900	..
			15,000	..
			18,000	..
			40,000	..
			9,400	16,500
			17,780	..
			7,750	10,000
			22,010	25,000
			21,000	15,150
			11,750	6,800
			4,160	7,000
			16,660	4,000
			18,000	..

16—Contd.

6	7	8	9
Manufacture of virus vaccine, Madras	..	..	..
Asstt. Disease Investigation Officer (Camels), Punjab	5,378·00	(+) 22·00	(a)
–do– U.P. ..	..	..	..
Improvement of Vaccine, Madras ..	..	..	..
Bacteriological flora of bovine genetalia, Orissa	4,000·00	..	..
Use of indigenous drugs in Veterinary Practices, I.V.R.I.	..	..	..
Investigation of Bovine Lymphantigitis, Mysore	..	..	..
Poultry Disease Investigation, Punjab	..	..	..
Survey and Investigation into Diseases of Ducks, Andhra Pradesh ..	2,000·00	..	..
Control of Brucellosis, Madras ..	13,000·00	..	..
–do– Orissa ..	..	..	..
Investigation and Control of Surra, I.V.R.I.	..	..	..
Investigation into Salmonolla in India, I.V.R.I.	..	..	..
Investigation into infectious Coryza and allied conditions in Poultry, I.V.R.I.	..	..	..
Rabbies Research and Diagnostic Centre, I.V.R.I.	16,500·00	..	..
Parasitic disease, Mysore	..	..	..
Fluke disease of bovine, Mysore ..	10,000·00	..	..
Investigation of infectious abortion (Brucellosis), U.P.	25,000·00	..	..
Liver fluke and other parasitic infection of Live-stock, Bihar ..	15,000·00	(+) 150·00	(a)
Control and eradication of stephonofil arising among cattle, Humpsore Scheme, Orissa	6,721·00	(+) 79·00	(a)
–do– Assam ..	7,000·00	..	..
–do– West Bengal ..	4,000·00	..	..
Studies on mycotic diseases in domestic animals in India, West Bengal ..	..	..	..

APPENDIX

1	2	3	4	5
			6,240	6,000
			7,000	..
			30,000	18,000
			32,000	76,200
			9,400	4,000
			8,000	5,500
			6,200	..
			6,700	10,000
			4,520	200
			7,000	..
			..	..
			18,000	9,600
			..	..
			1,400	..
			8,900	12,000
			..	..
			..	..
			5,100	..
			..	..
			..	..
			..	..

16 –Contd.

6	7	8	9
Investigation of bovine paraplogia and paralysis, Mysore	6,000·00	..	..
Coccidial fauna of cattle, Bombay ..	..	..	..
Bearing of nutrition on helminthic infection, I.V.R.I.	18,000·00	..	..
Control of bovine Pleuro-pneumonia, Assam	76,176·00	(+) 24·00	(a)
Elucidation of life history of .. (i) Parafilaria bovicola, (ii) Satariacorvi and (iii) Setariadigtata including studies on their pathologicity	4,000·00	..	..
Investigation of Brucellosis, Bihar ..	5,500·00	..	..
Experimental studies on Bovines Anaesthasia under Indian conditions, Orissa	4,000·00	(—) 4,000·00	(F) Demand received very late during the year.
Disease investigation, Himachal Pradesh	10,000·00	..	..
Lumbar Paralysis in sheep and goats, Punjab	122·00	(+) 78·00	(a)
Lumbar Paralysis in goats, Orissa ..	..	..	..
Investigation of Mastitis, Bombay ..	..	..	..
–do– I.V.R.I. ..	9,600·00	..	..
–do– Mysore ..	..	..	..
–do– Madras ..	..	..	..
–do– U.P. ..	12,000·00	..	..
Study of Fish Fauna and ecology food for fish—Saugar University ..	..	..	..
Damage caused by pigs and warble flies, I.V.R.I.	..	..	..
Total ..	3,51,156·10		
(e) Dairying			
Rapid deterioration of milk, West Bengal	..	..	..
–do– Punjab ..	..	..	..
Pathogenic Bacteria, I.D.R.I. ..	..	..	..
Preparation of Samtizers, I.D.R.I. ..	..	..	..

APPENDIX

1	2	3	4	5
			14,000	16,000
			25,000	10,000
			4,500	4,000
			1,36,620	..
			63,760	..
			12,150	..
			31,910	..
			15,850	..
			25,480	..
			17,060	..
			21,850	..
			19,200	25,500
			5,120	..
			12,000	..
			15,090	..
			18,250	..

16—Contd.

6	7	8	9
Bacteriological quality of Milk, Kaira, Bombay	15,980·74	(+) 19·26	(a)
Accelerated oxidation test of ghee, I.D.R.I.	10,000·00	..	..
Detection of adulteration and estimation of main constituents of milk, Punjab University	4,000·00	..	..
Studies on different methods of chilling Milk, N.D.R.I.	..	..	..
Standardization of methods of estimating total solids and solids-not-fat in milk by calculation, N.D.R.I. ..	..	..	..
Studies on the preparation of fermented milk, N.D.R.I.	..	..	..
Studies on the manufacture of Cheddar Cheese from market milk, N.D.R.I.	..	..	..
Preparation and Standardization of rennets of animal and vegetable origin for cheese manufacture, N.D.R.I.	..	..	..
Study on the economics of specialized dairy farming under various conditions, N.D.R.I.	..	..	..
Study of detailed mineral composition and mineral balance in Milk, N.D.R.I.	..	..	..
Study on the economics of specialized dairy farming under various conditions in Anand.	..	..	..
Study on the economics of specialized dairy farming under various conditions in Patiala, (Punjab) ..	25,500·00	..	..
–do– Madras ..	..	..	..
Survey of bacteriological quality of Milk supply to Haringhata Centre, West Bengal	..	..	..
Survey of bacteriological quality of milk in Trivandrum, Kerala ..	..	..	..
Standardizing the process for the manufacture of (1) Sterilized cream (2) Tinned butter and (3) Refining tinned ghee Kaira Union, Bombay	..	..	..

APPENDIX

1	2	3	4	5
			15,450	15,000
			10,000	5,200
			3,940	..
			..	..
			17,500	..
			12,000	20,000
			38,600	6,400
			..	..
			5,070	..
			20,000	..
			17,900	7,700
			..	300
			..	..
			..	1,500
			..	..
			27,000	20,000
			..	5,300

16—Contd.

6	7	8	9
Manufacture of bovine cured edam Cheese (ball type) and golden Cheese (small flat leaf) from standardized buffalo milk, Bombay	15,000·00	..	..
Survey of bacteriological quality of milk, Agricultural Institute, Allahabad	5,135·00	(+) 65·00	(a)
Estimation of milk sucked by calves in unweaned herds, Anand ..	15·62	(—) 15·62	(a)
Testing standard method for analysis of milk and products, I.D.R.I. ..	..	..	..
Study of sterilization cream and flavoured milk Aarey Colony, Bombay	..	..	..
Testing standard methods for milk and milk products, Bihar	20,000·00	..	..
Survey and bacteriological quality of milk in Delhi, N.D.R.I. ..	6,380·00	(+) 20·00	(a)
Heat resistant flora in Indian Milk, I.D.R.I.	..	..	..
Standardizing method for the analysis of ghee, I.D.R.I.	..	..	..
Survey of bacteriological quality of milk supply in Jaipur, Rajasthan ..	..	..	..
Sanitization of dairy utensils under rural conditions and in organized dairies in Allahabad City and in Allahabad District, Allahabad Agricultural Institute	7,658·00	(+) 42·00	(a)
Research on Indian *Dahi*, I.D.R.I. ..	233·36	(+) 66·64	(a)
Scheme for preparing of vegetable rennet and use of for preparing cheese, I.D.R.I.	4·98	(—) 4·98	(a)
Provision of clerical assistance to co-ordination officer of the scheme for the survey of bacteriological quality of milk, N.D.R.I.	1,470·00	(+) 30·00	(a)
Total ..	1,11,377·70		
(f) Wool			
Sampling wool for measurement of quality, Poona	..	..	..
Trial on graded wool, Rajasthan ..	20,000·00	..	..
Wool analysis, Bihar	5,300·00	..	..

APPENDIX

1	2	3	4	5
			..	600
			..	..
			..	1,500
			31,540	..
			4,800	100
			2,500	..
			..	..
			2,000	200
			5,800	4,700
			5,000	5,000
			4,000	5,000
			24,100	..
			..	1,200
			..	..
			8,000	6,700
			..	..
			4,000	1,300
			6,480	6,500
			3,970	2,000
			29,000	..
			3,930	..

16—Contd.

6	7	8	9
Wool analysis, Bombay, Baroda ..	556·00	(+) 44·00	(a)
Washing and grading of wool, Ajmer, Marwara	..	..	..
Establishment utilization of wool centre, Madras	1,500·00	..	..
Incidence of yellow colour in wool produced in Northern Plains, Rajasthan	..	..	..
Total ..	27,356·00	..	..
(g) Skins and Hides			
Chemistry of minerals tannages, C.L.R.I.	47·00	(+) 53·00	(a)
Manufacture of fat liquors, C.L.R.I. ..	..	..	..
Manufacture of chrome leather, C.L.R.I.	..	..	..
Manufacture of leather boards, C.L.R.I.	112·00	(+) 88·00	(a)
Skin studies of sheep (Coordinated scheme), Bombay	5,690·00	(+) 10·00	(a)
Skin studies of sheep (Coordinated Scheme), U.P.	5,000·00	..	..
–do– Rajasthan ..	5,000·00	..	..
Total ..	14,849·00		
(h) Poultry			
Influence of climate on performance of desi strain of fowl, Orissa ..	1,176·42	(+) 23·58	(a)
Disease of poultry, Bihar	..	..	..
Coccidiosis in poultry, I.V.R.I. ..	6,700·00	..	..
Poultry Research, M.P.	..	..	..
–do– Kerala ..	1,231·11	(+) 68·89	(a)
Increased duck production in the areas, Punjab	6,500·00	..	..
Determination of the ideal conditions for the commercial storage of eggs, Punjab	1,950·00	(+) 50·00	(a)
Popularising the rearing of baby chicks, I.V.R.I.	..	..	..
A.D.I.O. (Poultry), Andhra ..	..	..	..

APPENDIX

1	2	3	4	5
			90,000	1,03,000
			10,000	10,300
			10,000	1,000
			80,700	90,000
			3,000	2,500
			8,200	10,000
			..	..
			12,000	..
			4,000	..
			2,000	..
			8,600	..
			34,000	22,800
			40,000	..
			2,900	2,000
			3,000	2,500
			2,500	2,200
			3,000	2,000
			3,770	2,000
			7,230	10,000
			23,600	..
			..	..

16—Contd.

6	7	8	9
Poultry development American Mission, Madras	1,05,802·50	(—)2,802·50	(a)
Study of cross breeding in poultry, Allahabad	10,278·86	(+) 21·14	(a)
Keeping poultry in battery in West Bengal	1,000·00	..	..
Rearing of white Leghorn Chicks, Y.M.C.A., Martandam ..	90,000·00	..	..
Defertilization of eggs, I.V.R.I. ..	2,500·00	..	..
Investigation of possibilities of correlation between physiological and body characteristics of egg production, I.V.R.I.	9,740·00	(+) 250·00	(a)
Helminth parasites affecting poultry, I.V.R.I.	..	..	..
Development of duck breeding, A.P.	..	..	..
To produce proven cocks for poultry improvement, Madras	..	..	..
Selective Breeding of Aseel breed of Poultry, A.P.	..	..	..
Improvement of desi Strains of chickens for both egg production and meat by establishing strains of cropping them, I.V.R.I.	..	..	..
Formation of hybrids from early tested inbreds of white leghorn and Rhode Island Red, U.P. ..	22,705·00	..	..
Comparing performance of different strains of poultry by applying random sample tests, I.V.R.I. ..	..	..	..
Cheap poultry house, Madras ..	2,000·00	..	..
–do– Bihar ..	2,426·00	(+) 74·00	(a)
–do– Orissa ..	2,200·00	..	..
–do– U.P. ..	2,000·00	..	..
–do– M.P. ..	2,000·00	..	..
Investigating the advantages of biology production large unit, Hyderabad ..	10,000·00	..	..
Scheme for investigating the advantages of producing poultry in large unit, Nagpur, Bombay	..	..	..
Duck breeding, Bihar	..	..	..

APPENDIX

1	2	3	4	5
			6,700	6,310
			29,000	19,100
			2,610	..
			..	..
			9,030	4,000
			22,950	..
			1,500	..
			5,840	..
			3,930	..
			5,460	3,000
			33,200	..
			10,000	..
			14,100	12,000
			4,670	300
			14,000	10,000
			5,210	2,000
			23,830	..
			50,000	11,500
			..	..

16—Contd.

6	7	8	9
Duck breeding, Kerala	6,000·00	(+) 310·00	(a)
–do– I.V.R.I.	19,000·00	(+) 40·00	(a)
Cheap and durable poultry house, Andhra Pradesh	..	..	..
Total ..	3,05,269·89		
(i) Fish			
Processing of unpopular fish, W. Bengal	..	..	..
Study of Microbial flora-fresh water fish from Bay of Bengal, W. Bengal ..	4,000·00	..	..
Farming of fresh water prawns in confined water, Andhra Pradesh ..	..	..	..
Preparation of Peptone from Fish, Andhra Pradesh	..	..	..
Improved method of fish Preservation, Andhra Pradesh	..	..	..
Brackish water fish culture, Madras ..	..	..	..
Improved methods of transport and short time preservation of fresh water fish, West Bengal	3,000·00	..	..
Hydro-Biological and Faunistic Survey of the Godavari Estuarine system, Andhra University	..	..	..
Ecology of fresh water fish in U.P., Lucknow University	..	..	..
Research in Paddy-cum-pisciculture in Krishna District, Andhra ..	12,000·00	..	..
Total ..	19,000·00		
(j) Agriculture			
Establishment of Bee-Keeping Centre, Madras	254·00	(+) 46·00	(a)
Northern Region Chamba, Himachal Pradesh	10,000·00	..	
Improving honey yield of bee-hives, A.P.	2,000·00		
Total ..	12,254·00		
Award of fellowships in A.H. Subject, I.V.R.I.		11,500·00	
Award of Fellowships in Dairying I.D.R.I.			

	**Rs. nP.
(a)	6,89,281·86
(b)	4,37,357·01
(c)	4,20,839·96
(d)	3,51,156·10
(e)	1,11,377·70
(f)	27,356·00
(g)	14,849·00
(h)	3,05,269·89
(i)	19,000·00
(j)	12,254·00
(k)	21,300·00
Total ..	24,10,041·52

APPENDIX

1	2	3	4	5
			8,000	..
			..	..
			..	..
			9,600	8,000
			3,250	..
			2,100	1,800
			..	..
			2,050	16,670
			8,000	..
			..	..
			..	..
			9,360	..
			7,419	..
			..	..
			..	..
			5,300	700
			..	..
			2,580	1,000
			4,400	..
			3,440	..
			500	..
			..	..

16—Contd.

6	7	8	9
Diploma course in Swine Husbandry and Pork processing at Central Dairy Farm, Aligarh, U.P.	..	..	..
Using cow for work, I.D.R.I. ..	..	..	..
Postgraduate course in parasitology, Madras	..	..	..
Award of fellowship in A.H. subjects, N.D.R.I., Kerala	8,000·00	..	..
–do– Bombay ..	..	..	..
–do– Calcutta ..	1,800·00	..	..
Total ..	21,300·00		
Total: A.H. Schemes. Rs. 24,10,041·52 nP.			
(iii) Combined Agriculture and Animal Husbandry Schemes			
(a) DEVELOPMENT			
Improved axels and hubs, I.A.R.I. ..	..	..	..
Improved bullocks drawn Agricultural Implements, B.R. College, Agra ..	16,670·00	..	..
Production and trial of Agriculture implements, I.A.R.I.	..	(—)26,200·00	..
Refresher course in agriculture for young farmers, Andhra ..	..	..	..
–do– Amravati ..	..	..	..
–do– V.P. ..	..	..	..
–do– Hyderabad ..	..	..	..
–do– Bombay ..	..	..	..
–do– Mysore ..	..	..	..
Survey of indigenous implements, I.A.R.I.	706·00	(—) 6·00	(a)
–do– U.P. ..	..	..	..
–do– Orissa ..	997·00	(+) 3·00	(a)
–do– Mysore ..	..	..	..
–do– Rajasthan ..	..	..	..
–do– V.P. ..	..	..	..
Research fellowships in agriculture, Ernakulam (Andhra)	..	..	..

APPENDIX

1	2	3	4	5
			..	..
			..	..
			7,000	..
			4,000	..
			5,000	..
			5,440	5,400
			4,970	..
			5,480	..
			4,000	2,000
			5,440	3,000
			4,640	..
			5,670	..
			5,210	..
			4,480	..
			4,300	6,000
			4,610	..
			3,780	..
			36,160	7,600
			5,500	..
			5,500	..
			3,330	..
			3,530	2,000
			3,530	..
			3,530	..
			3,530	..
			3,530	..
			3,530	..
			3,530	..
			3,530	..

16 –Contd.

6		7	8	9
–do–	Ludhiana (Punjab)	..	..	..
–do–	I.A.R.I. ..	..	..	..
Study of filter point tube well, A.P.		..	..	..
Survey of additional indigenous agricultural implements—all States, Jammu and Kashmir ..	..	..	..	..
–do–	Kerala ..	..	..	..
–do–	Orissa ..	5,400·00	..	..
–do–	Bihar ..	..	..	..
–do–	Andhra ..	..	..	..
–do–	Madras ..	2,000·00	..	..
–do–	U.P. ..	3,000·00	..	..
–do–	Punjab ..	..	..	..
–do–	Bombay ..	..	..	..
–do–	Assam ..	..	..	..
–do–	M.P. ..	..	..	..
–do–	Rajasthan ..	6,000·00	..	..
–do–	W. Bengal ..	..	..	..
–do–	Mysore ..	..	..	..
–do–	I.A.R.I. ..	7,540·00	(+) 60·00	(a)
Survey of fertilizer practices in Meerut Distt., U.P.	.. ..	..	..	..
–do–	Kerala ..	..	..	..
Scheme for the trial of imported agricultural implements, Orissa ..		..	..	..
–do–	Bihar ..	2,200·00	(—) 200·00	(a)
–do–	Punjab ..	..	..	..
–do–	Madras ..	..	..	..
–do–	M.P. ..	..	..	..
–do–	Rajasthan ..	..	..	..
–do–	U.P. ..	..	..	..
–do–	Mysore ..	..	..	..
–do–	Bombay ..	..	..	..

APPENDIX

1	2	3	4	5
			3,530	2,000
			3,530	..
			3,530	..
			3,530	..
			2,10,110	..
			..	..
			..	..
			..	..
			..	..
			18,000	..
			37,030	48,400
			37,280	..
			2,850	2,300
			55,500	23,000
			48,100	28,000
			20,000	..
			28,000	..
			22,840	16,400
			3,000	8,000
			..	200

16—Contd.

6	7	8	9
–do– Kerala ..	2,000·00	..	..
–do– Assam ..	..	..	..
–do– Andhra ..	..	..	..
–do– Jammu and Kashmir	..	..	..
Total combined agri. and A.H. Schemes	20,313·00		
(iv) MARKETING SCHEME			
Provincial Marketing Scheme ..	..	..	..
Total Marketing Scheme ..	..	..	..
(v) COLD STORAGE SCHEME	..	..	..
Total ..	..		
(vi) STATISTICAL AND MISCELLANEOUS SCHEME			
Method and practice of Farm Accounts Gokhale Institute	..	..	..
Scheme for Studying the intensive cultural practice in small holding, Calcutta University	..	..	..
Pilot sample investigation on the cultivation practices and yield on orange crops, Bombay	48,380·00	(+) 20·00	..
Pilot sample investigation on the cultivation practices and yield in Mango crops—U.P. 33 ..	..	..	..
Advantage and economics of mechanized farming, Madras	2,300·00	..	..
Pilot Scheme for study of cultivation practices and yield of guava crops in Allahabad, U.P.	23,000·00	..	..
–do– Banana crop, Kerala	28,000·00	..	..
–do– Line crop—A.P. ..	..	..	..
Survey to work out the cost of production of sheep and wool, Rajasthan	..	..	..
Study of mechanized farming, Banaras Hindu University	16,350·00	(+) 50·00	(a)
Study of economics of breeding, Bombay	8,000·00	..	..
Study of farm and non-farm employment in South Arcot Distt. Annamalai University	92·72	(+) 107·28	(a)

APPENDIX

1	2	3	4	5
			2,000	..
			24,000	23,000
			25,750	20,800
			61,150	63,500
			13,000	22,900
			10,000	..
			16,000	..
			5,440	4,400
			17,000	21,000
			15,000	..
			14,180	..
			30,000	40,300
			21,000	15,500
			49,000	22,000
			29,070	..
			..	1,300

16—Contd.

6	7	8	9
Pilot sample survey pepper, Kerala ..	..	..	..
Scheme for study of economics conditions of Ghata prabha left Bank Canal Area, Mysore	23,000·00	..	..
Study of production and consumption aspect of agricultural families in different class structure at Anand (Bombay)	20,800·00	..	..
Pilot scheme for study of incidence of pests and disease of rice, Orissa and I.C.A.R.	63,470·00	(+) 30·00	(a)
Investigating the cost of production of sheep and wool, Andhra Pradesh ..	23,000·00	(—) 100·00	(a)
Operational research for studying the extent to which improved agricultural practices are being adopted and their economics, Madras ..	..	..	..
Conduct of pilot surveys for evaluation of various improved agricultural practices, U.P.	..	..	..
Studies in the behaviour of consumption and marketing, Gokhale Institute of Politics and Economics ..	4,320·00	(+) 80·00	(a)
Sample survey to determine effect of mechanization of fishing craft, Bombay	21,000·00	..	..
Pilot scheme for study of cultivation of fruits and vegetable crops, other centres	..	..	..
Appraisal of over-all-benefits of improvement in farming and possibilities of budgetting, Bihar ..	..	..	..
Scheme for the establishment of a research-cum-testing centre for bullock-driven agricultural implements, Coimbatore	40,230·00	..	..
Pilot investigation for collection of statistical data on yield and extent of Cashewnut Cultivation, Kerala..	15,480·00	(+) 20·00	(a)
–do– other centres ..	22,000·00	..	..
Scheme for the survey for estimating the cost of production of milk in Calcutta	45,450·00	(—) 45,450·00	Demand for funds received late.
Scheme for ascertaining the cost of milk production, Madras	1,253·35	(+) 46·65	(a)

APPENDIX

1	2	3	4	5
			18,000	..
			27,220	..
			7,000	..
			20,820	32,000
			10,000	..
			..	6,000
			57,080	..
			..	..
			15,400	..
			28,750	..
			28,000	..
			..	42,300
			8,70,510	..
			34,810	37,400
			34,810	..
			96,21,110	..

16—Contd.

6	7	8	9
Enquiry into the effects of lift irrigation, Osmania University	..	..	..
Enquiry into the cost of production of vegetable, Punjab	..	..	..
Enquiry into economics of irrigation in Coimbatore District, Madras ..	..	..	..
Scheme for enquiry into factors influencing cropping pattern on individual holdings, B.R. College, Agra	31,870·00	(+) 130·00	(a)
–do– Andhra Pradesh	..	..	..
Scheme for enquiry into factors influencing cropping pattern on individual holdings, Orissa ..	6,000·00	..	..
–do– Bihar ..	..	..	..
–do– Punjab ..	..	..	..
Investigation on the adoption of improved practices and the capital invested on different types and sizes of farms, Dharwar (Mysore) ..	..	..	..
Survey to work out the cost of production of sheep and wool, Bombay ..	..	..	..
–do– Andhra Pradesh	..	..	..
Scheme for the establishment of a Research-cum-Testing Centre for bullock-driven agricultural implements, I.A.R.I.	42,220·00	(+) 80·00	(a)
Total ..	4,86,216·07		
Total Misc. Schemes			
D. Contribution			††*Total C. Grants-in aid.*
Commonwealth Agricultural Bureaux Imperial Institute of Entomology, Farnham House Laboratory, Imperial Bureaux of Dairy Science, Fruit Preservation Research Station, Campden	37,360·00	(+) 40·00	(a) (i) Agri. Scheme 27,75,933·97
Total ..	37,360·00		(ii) A. H. Schemes. 24,10,041·52
			(iii) combined Agri. and A.H. schemes 20,313·00
Total C-Grants-in-aid	††56,92,504·56		(iv) Marketing. Nil
			(v) Cold Storage Nil
			(vi) Misc. Schemes 4,86,216·07
		Total ..	56,92,504·56

APPENDIX

1 ..	2	3	4	5
			20,000	22,410
			2,00,000	1,39,000
			55,000	30,000
			2,75,000	..

16—Contd.

6	7	8	9
DEBITS AND REMITTANCES			
Loans and Advances	22,327·69	(+) 72·31	(a)
Deposits and Advances repayable ..	1,39,437·94	(—) 437·94	(a)
Payment of income-tax provident fund etc.	45,299·36	(—) 15,299·36	(a)
Total Debits and Remittances ..	2,07,064·99		
Add :			
(i) Investments and re-investments	48,50,000·00		**(i) Cash Balance 704·91
(ii) Refund of unspent balance to Govt. of India as per list attached	3,28,940·88		(ii) Bank Balance 20,98,047·31
			(iii) Prov. Fund. 1,72,399·88
(iii) Closing balances	22,71,196·10**		44·00
GRAND TOTAL ..	1,82,46,922·71 nP.	Total .. see appendix 17	22,71,196·10

APPENDIX

INDIAN COUNCIL OF

Statement of Receipts and

Receipts and Opening Balance			Rs. nP.
I. Opening Balance			14,77,550·91
II. Receipt under A.P.C. Act			49,57,589·96
III. Contribution & Grants			24,34,097·84
(a) From Central Government	8,86,340·00		—
(b) From Constituent States			
(c) From Special Grants	15,47,757·84		—
IV. Interest from Investments			6,37,792·90
V. Miscellaneous Receipts			14,95,075·41
VI. Debts and Remittance			3,44,815·69
VII. Investments and Re-investments			69,00,000·00
	Grand Total ..		1,82,46,922·71
(1) Opening Balance	14,77,550·91		
(2) Receipts during the year	98,69,371·80		
(3) Investments and Re-investments	69,00,000·00		
Grand Total	1,82,46,922·71		
Particulars of Closing Balance			
1. Cash in hand as per Cash book as on 31–3–61			704·91
2. Bank Balance (Genl. A/c. Ledger) on 31–3–61			20,98,047·31
3. Prov. Fund Balance			1,72,399·88
			44·00
		Total ..	22,71,196·10

Checked and found correct subject to the remarks in the Inspection Report.

Sd/— R. K. DAS
Assistant Accounts Officer,
Central Revenues,

17

AGRICULTURAL RESEARCH

EXPENDITURE FOR THE YEAR 1960–61.

	Expenditure and Closing Balance			Rs. nP.
A.	Standing Charges			15,22,561·99
B.	Research Training Publicity, etc. under direct control of I.C.A.R. ..			33,37,294·19
	(i) Agri. Schemes:	13,78,463·36		
	(ii) A. H. Schemes:	84,096·82		
	(iii) Miscellaneous:	18,74,734·01		
C.	Grant-in-Aid			56,92,504·56
	(i) Agri. Schemes:	27,75,933·97		
	(ii) A. H. Schemes:	24,10,041·52		
	(iii) Combined Agri. & A. H. Schemes:	20,313·00		
	(iv) Marketing:	—		
	(v) Cold Storage:	—		
	(vi) Miscellaneous:	4,86,216·07		
D.	Contribution to Institutions			37,360·00
E.	Debts & Remittances			2,07,064·99
	Refund to Government of India			3,28,940·00
	Investment and Re-investment			48,50,000·00
	Closing Balance			22,71,196·10
			Total ..	1,82,46,922·71
1.	Payments during the year	1,07,96,785·73		
2.	Refund to Government of India	3,28,940·88		
3.	Investment and Re-investment	48,50,000·00		
4.	Closing Balance	22,71,196·10		
	Grand Total	1,82,46,922·71		

Financial Position (Assets) of the I.C.A.R. (Research Side) on 31-3-61

		Rs. nP.
(i)	Closing Balance as per details given above ..	22,71,196·10
(ii)	Purchase value of Securities as per statement attached	1,83,92,949·11
(iii)	Imprest A/c. (in the name of Addl. Secy). ..	1,000·00
	Total ..	2,06,65,145·21

Sd/— J. P. VAISH
Under Secretary
Indian Council of Agricultural Research.

APPENDIX 18

List of Securities as on 31-3-1961

Sl. No.	Particulars	Face Value Rs. nP.	Purchase Value Rs. nP.
1.	3% Stock 1963-65	16,49,500·00	15,54,334·00
2.	2¾% Stock 1962	4,00,000·00	4,02,736·56
3.	–do–	5,50,000·00	5,50,000·00
4.	3% Loan 1970-75	63,09,400·00	54,99,882·02
5.	3½%National Plan Bonds. 1961	10,11,400·00	10,00,000·00
6.	3¾% Loan 1974	35,53,200·00	34,99,902·00
7.	4% Loan 1972	18,56,200·00	18,56,200·00
8.	4% Loan 1979	5,00,000·00	5,00,000·00
9.	23 Short Term Deposit receipts Nos. A 001122 to A 001144 for Rs. 50,000/- each	11,50,000·00	11,50,000·00
10.	9 Short Term Deposit receipts Nos. A 167219 to A 167227 for Rs. 1,00,000/- each	9,00,000·00	9,00,000·00
11.	3 Short Term Deposit receipts Nos. A 168896 to A 168898 for Rs. 1,00,000/- each	3,00,000·00	3,00,000·00
12.	2 Short Term Deposit receipts Nos. A 111260 and A 111261 for Rs. 1,00,000/- each	2,00,000·00	2,00,000·00
13.	3 Short Term Deposit receipts Nos. A 111473, A 111478 and A 111477 for Rs. 1,00,000/- each	3,00,000·00	3,00,000·00
	Total ..		1,77,13,054·58

Particulars of Securities from Provident Fund Account.

Sl. No.	Particulars	Face Value Rs. nP.	Purchase Value Rs. nP.
1.	12 Year National Saving Certificates Nos. NS/PO 87031 to 087035, 087037 to 087041	50,000·00	50,000·00
2.	12 Year National Certificates, Nos. NS/028496, 028497, 063601 to 063610		60,000·00
3.	12 Year National Savings Certificates Nos. NS/F087258 to 087263		30,000·00
4.	3½% National Plan Loan 1964 Safe Custody Receipt No. DH. 295		34,606·25
5.	3½% National Plan Loan 1964 Safe Custody Receipt No. DH. 296		14,838·28
6.	12 Year National Savings Certificates Nos. G113337 to 113346		50,000·00
7.	12 Year National Savings Certificates Nos. P087126 and G** 110921 to G 110931		60,000·00
8.	12 Year National Savings Certificates Nos. G 015275 to G 015288		70,000·00
9.	12 Year National Savings Certificates Nos. G 0235801 to 0235828		1,40,000·00
10.	Short Term Deposit Receipts No. F 22339 payable at Weeks' notice		20,000·00
11.	12 Year National Savings Certificates Nos. 015041 to 015046		1,50,000·00
	Total ..		1,83,92,949·11

Job Press Private Limited, Kanpur.